University Of Alberta
0 0002 85072 42

FOOD FOR TODAY

HELEN KOW TALUK
ALICE O. KOPAN

CURRICULUM

THIS BOOK IS THE PROPERTY OF:

STATE_____
PROVINCE_____
COUNTY_____
PARISH_____
SCHOOL DISTRICT_____
OTHER_____

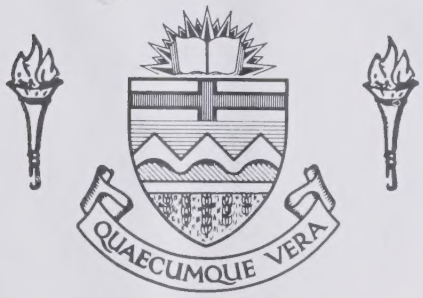
Book No. _____
Enter information in spaces to the left as instructed

ISSUED TO	Year Used	CONDITION	
		ISSUED	RETURNED

PUPILS to whom this textbook is issued must not write on any page or mark any part of it in any way, consumable textbooks excepted.

1. Teachers should see that the pupil's name is clearly written in ink in the spaces above in every book issued.
2. The following terms should be used in recording the condition of the book: New; Good; Fair; Poor; Bad.

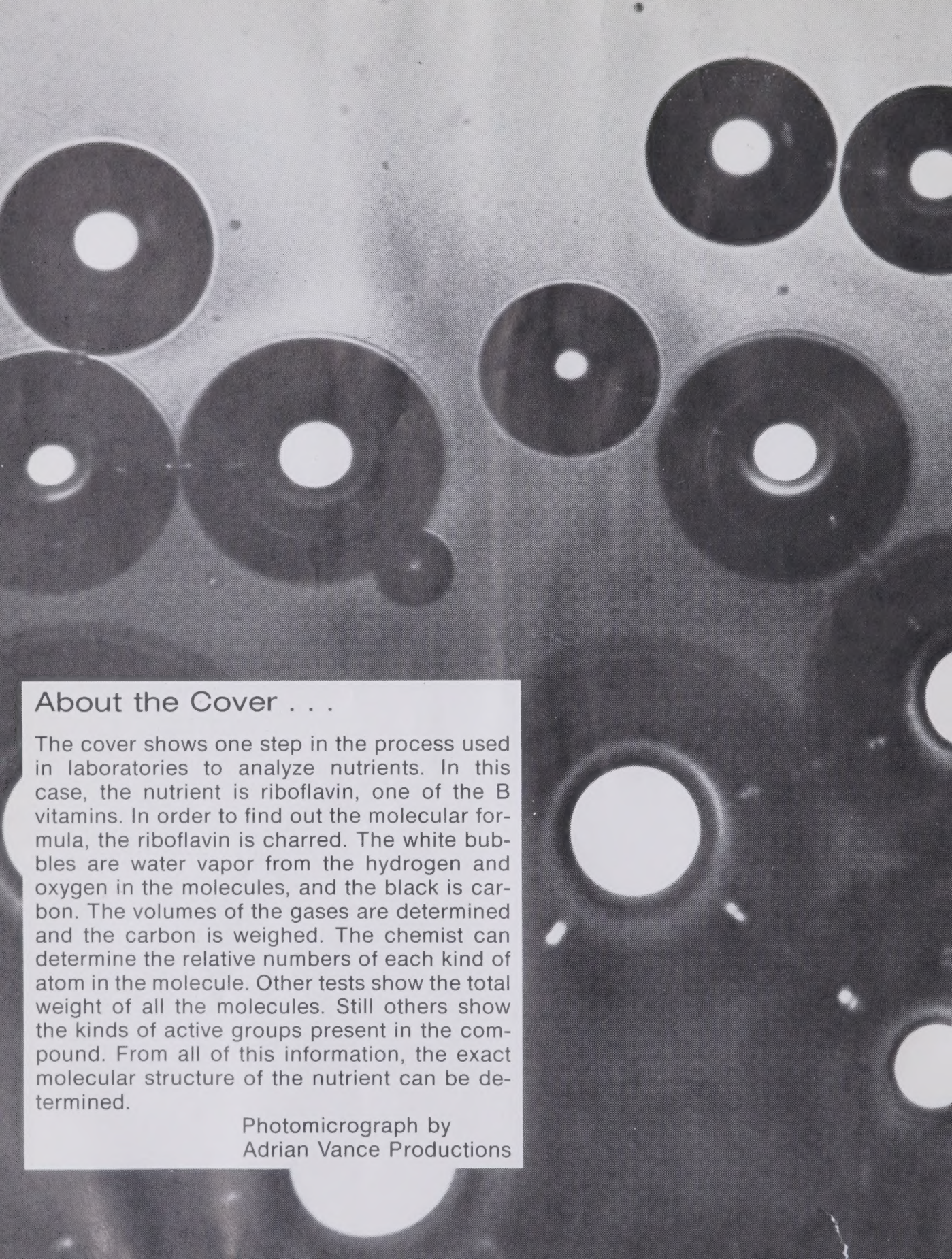
Ex libris
universitatis
albertaensis



Digitized by the Internet Archive
in 2021 with funding from
University of Alberta Libraries

https://archive.org/details/foodfortoday00kowt_2

Food For Today



About the Cover . . .

The cover shows one step in the process used in laboratories to analyze nutrients. In this case, the nutrient is riboflavin, one of the B vitamins. In order to find out the molecular formula, the riboflavin is charred. The white bubbles are water vapor from the hydrogen and oxygen in the molecules, and the black is carbon. The volumes of the gases are determined and the carbon is weighed. The chemist can determine the relative numbers of each kind of atom in the molecule. Other tests show the total weight of all the molecules. Still others show the kinds of active groups present in the compound. From all of this information, the exact molecular structure of the nutrient can be determined.

Photomicrograph by
Adrian Vance Productions

Food For Today

HELEN KOWTALUK
Home Economics Writer
Former Associate Food Editor,
Better Homes and Gardens Magazine

ALICE ORPHANOS KOPAN
Educational Consultant
Former Supervisor of Home Economics,
Chicago Public Schools



CHAS. A. BENNETT CO., INC.
Peoria, Illinois 61614

Copyright © 1977 by

Helen Kowtaluk
and
Alice Orphanos Kopan

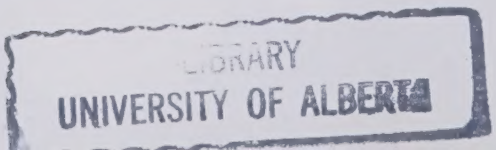
All rights reserved

78 79 80 KP 10 9 8 7 6 5 4 3

ISBN 87002-181-8

Library of Congress Catalog No. 76-11389

Printed in the United States of America



Preface

Food for Today was written with one major goal in mind—to help students make the best food decisions possible in today's complex world.

Broad in scope, the book includes beginning and advanced food and nutrition information for both young men and women. Consumer decisions are emphasized throughout. The metric system is used throughout, with metric measures given first, followed by the customary measures in brackets.

Selecting healthful foods every day can be challenging and confusing. World population continues to increase, which means more and more people are competing for the food available. Prices are high. Some foods are scarce. Through advanced technology, new kinds of foods appear in the marketplace at a rapid rate. Some people question the nutritional value of certain foods being sold.

Life styles are changing rapidly. People eat out more. Sometimes work and activity schedules allow only a limited amount of time for adequate food intake.

These concerns and many others are discussed in *Food for Today* to give students a basic foundation in food, nutrition, and good health. Understanding these facts can help students make better daily food choices to meet their needs. By studying and understanding the concepts in this book, students will be able to:

- Relate good nutrition to health.
- Determine what their daily food needs are.
- Understand food customs in relation to different ethnic groups and life styles.
- Sift out exaggerated claims and recognize the facts relating to food and nutrition in advertising, news reports, and other media presentations.
- Make food choices to meet their daily nutrition needs.
- Reach and maintain their best weight level.
- Be aware of the seriousness and complexity of the world food situation.
- Make the best possible decisions in the marketplace relating to food and kitchen appliances and equipment.
- Use correct methods in buying and storing food.
- Prepare and serve nutritious food creatively for family and friends.
- Consider a career in food and nutrition.

The book is divided into five parts:

Part One, "Nutrition for Good Health," discusses food habits, how nutrition affects health, what the nutrients do for the body, weight control, and the problems of the world food situation.

Part Two, "Consumer Decisions," deals with the decisions today's consumer must make—selecting and storing food, making the best use of kitchen space, and buying and using kitchen appliances and equipment.

Part Three, "Food Preparation and Service," presents basic information on food preparation and serving food. It tells why foods react as they do to different cooking methods.

Part Four, "Creative Cooking," covers the creative aspects of food preparation, including ethnic and regional foods and outdoor cooking.

Part Five, "Careers," highlights the career possibilities in food and nutrition and gives guidelines for getting and keeping a job.

Each chapter includes features to help students use the information presented. "To help you to . . ." at the beginning of each chapter lists instructional objectives in terms students will understand. "Look for these terms" itemizes

2726099

key terms used in the chapter. These words appear in italics in the text and are defined.

Throughout each chapter, "Let's Explore and Report" lists activities to help students relate the text information to daily living. At the end of each chapter, "What Would YOU Do?" presents a problem for the students to solve. It gives them an opportunity to use the information presented in the chapter to make a realistic decision.

Appendices include the metric system, nutrition charts, tables, and a list of food terms.

Acknowledgments

We wish to express special appreciation to the following who read and commented on portions of this textbook:

Frances Hall, Assistant Director, Nutrition Research Department, National Live Stock and Meat Board, Chicago, Illinois.

Dr. Richard Houk, Chairman, Department of Geography, De Paul University, Chicago, Illinois.

Dr. Andrew T. Kopan, Director, Division of Educational Foundations, School of Education, De Paul University, Chicago, Illinois.

Willa Owens, Kitchen Industry Consultant, Bozman, Maryland.

Virginia Schroeder, Director, Test Kitchen, Standard Brands, Inc., New York, New York.

Staff of the Kickapoo Council of Girl Scouts, Inc., Peoria, Illinois.

Reba Staggs, Director, Home Economics Department, National Live Stock and Meat Board, Chicago, Illinois.

Ruth Wheeler, Chairman, Home Economics Department, Evanston Township High School, Evanston, Illinois.

Philip L. White, Sc. D., Director, Department of Foods and Nutrition, American Medical Association, Chicago, Illinois.

Fran Williams, Home Economics Teacher, Evanston Township High School, Evanston, Illinois.

Jeanne Wurtzinger, RD, Director of Nutrition, Peoria Health Department, Peoria, Illinois.

We are also extremely grateful to the members of the food and nutrition industry and government agencies who assisted us with information and who supplied many of the illustrations used in this book.

Helen Kowtaluk

Alice Orphanos Kopan

Editor: Michael Kenny
Layout design by: Gordon Guderjan
Carol Watters
Diane McBroom
Darrell Loveless

Drawings by Diane Verkler Pollock

Table of Contents

Part 1
Nutrition for Good Health
11

Chapter 1 Your Food Habits 13
Why Do You Eat? 13
How Did Food Customs Originate? 16
What Influences Your Food Choices? 24

Chapter 2 Is Our Food Safe To Eat? 29
What Are Additives? 29
Contaminants 31
The Truth Behind Food Fads 34

Chapter 3 Food and Your Health 39
What Is Good Health? 40
What Happens to Food in the Body? 43
How Life Styles Affect Nutrition and Health 55

Chapter 4 Introduction to Nutrition 59
What Are Nutrients? 59
How Do Nutrients Work? 63
How Does Nutrition Affect Your Health? 67
What Is Nutrition Labeling? 70
Know Your Nutrients 72

Chapter 5 More About the Nutrients 77
Carbohydrates 77
Fats 80
Proteins 82
Vitamins 86
Minerals 92

Chapter 6 Food Choices for a Day 99
Meal Patterns 99
Daily Food Guide 101
Planning Meals 109

Chapter 7 Controlling Your Weight 123
What Is Your Best Weight? 123
What Causes Weight Problems? 126
If You Are Overweight 127
If You Are Underweight 139
Keeping Your Right Weight 141

Chapter 8 Meeting Special Food Needs 143
Teenage Athletes 143
Living Alone 144
Vegetarians 146
Food Needs and the Life Cycle 147
Food for Medical Problems 152

Chapter 9 Planet Earth: Enough Food for All? 157
The Good Years 157
What Caused the Food Shortage? 159
What Is the Solution? 165

Part 2 Consumer Decisions 171

Chapter 10 **The Consumer in the Marketplace 173**
How Do You Make Decisions? 173
How Much Should You Spend on Food? 174
Where Will You Shop? 175
Be an Aware Shopper 177
Plan Your Shopping 179
When You Have Complaints 183
How Food Gets to the Marketplace 185

Chapter 11 **Your Buying Guide to Food 189**
Milk Group 189
Fruits and Vegetables 195
Breads and Cereals 201
Meat Group 205
Fats, Oils, and Sweeteners 220

Chapter 12 **How To Store Food 223**
Why Must Food Be Stored? 223
What Causes Food To Spoil? 223
Kinds of Food Storage 224
Storing Food 228

Chapter 13 **Your Kitchen 237**
Guidelines for Kitchen Planning 237
Do the Best with What You Have 242
Decorating the Kitchen 249

Chapter 14 **How To Buy Kitchen Appliances and Equipment 251**
How To Buy Appliances 251
Major Appliances 254
Portable Electric Appliances 264
Buying Used Appliances 266
Kitchen Equipment 267

Part 3 Food Preparation and Service 271

Chapter 15 **Sanitation and Safety 273**
Sanitation in the Kitchen 273
Safety in the Kitchen 279

Chapter 16 **Kitchen Ecology 287**
How To Conserve Natural Resources 287
How To Conserve Personal Resources 293

Chapter 17 **Preparing Dairy Foods 307**
Cooking with Milk and Cream 307
When You Make Frozen Desserts 308
Serving and Cooking Cheese 309
Using Convenience Forms 311

Chapter 18 **Preparing Breads and Cereals 313**
Principles of Baking 313
How To Make Cakes 316
How To Make Cookies 319
How To Make Pastry 320

How To Make Quick Breads 323
How To Make Yeast Bread 325
How To Prepare Pasta 329
How To Use Thickening Agents 330
Using Convenience Forms 330

Chapter 19 Preparing Fruits and Vegetables 333
Fruits 333
Vegetables 336
Salads 342
Using Convenience Forms 345

Chapter 20 Preparing Meat, Poultry, Fish, and Eggs 349
Meat 349
Poultry 354
Fish and Shellfish 356
Eggs 358
Soup 364
Using Convenience Forms 365

Chapter 21 Preserving Food at Home 367
Should You Preserve Food? 367
First Steps To Freezing or Canning 367
To Freeze Fresh Fruits and Vegetables 368
To Can Fresh Fruits and Vegetables 369
To Make Pickled Foods, Jellies, and Jams 374

Chapter 22 Serving and Eating Food 377
Setting the Table 377
How To Serve Food 381
Table Behavior 386
Entertaining 388
Beverages 390

Part 4 Creative Cooking 397

Chapter 23 The Art of Creative Cooking 399
Convenience Foods, the Time Savers 399
Gourmet on a Budget 401
Serve with a Flair 402
Herbs and Spices 406
Finishing Touches 411
Food as Gifts 413

Chapter 24 Food Around the World 417
Great Britain 417
France 418
Spain 419
Scandinavia 420
Germany 421
Italy 421
Russia 424
Near and Middle East 425

Africa 427
India 430
The Orient 430
Mexico 433
Caribbean Islands 434

Chapter 25 Regional Foods in the United States 437
Foods of the American Indians 437
Food Traditions of the Immigrants 439
Foods of the Northeast 439
Midwestern Foods 442
Foods in the South 443
Foods in the Southwest 448
Pacific Coast and Northwest Foods 449
Hawaiian Food 451
Regional Foods Today 451

Chapter 26 Outdoor Cooking 455
Cooking on an Outdoor Grill 455
Cooking over a Campfire 459

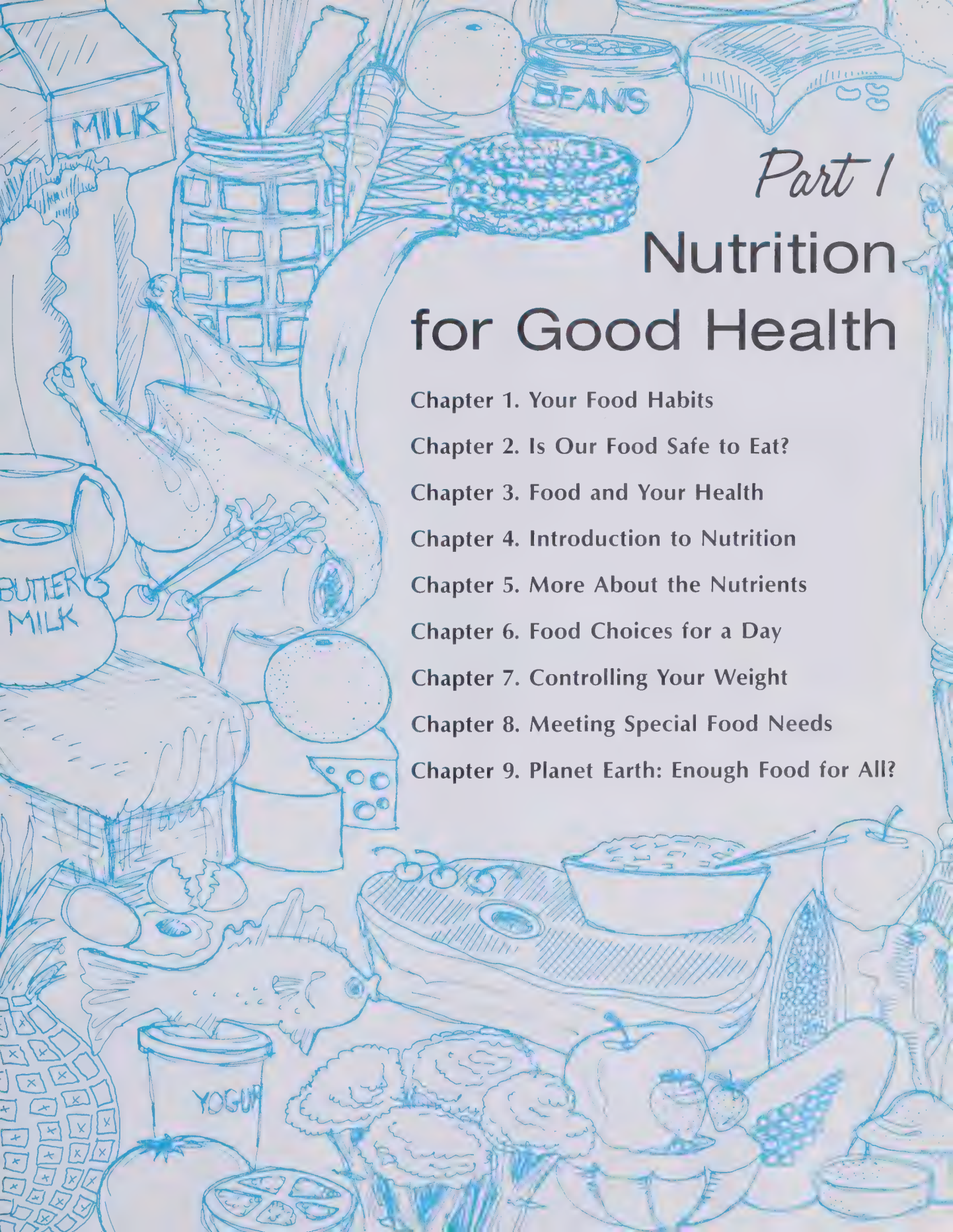
Part 5 Careers 467

Chapter 27 Careers in Food and Nutrition 469
A Career for You 469
Career Opportunities 472

Chapter 28 How To Get and Keep a Job 485
Where To Look for a Job 485
Getting the Job 489
How To Keep the Job 493

Appendix A Metric System 498
Appendix B Recommended Dairy Dietary Allowances (RDA) 499
Appendix C U.S. Recommended Daily Allowances (U.S. RDA) 500
Appendix D Percentages of U.S. RDA 501
Appendix E Nutrition Label 502
Appendix F Anatomy of a Food Label 503
Appendix G Nutrients in Food 504
Appendix H Important Food Sources of Nutrients 541
Appendix I Common Food Preparation Terms 551
Appendix J Customary Abbreviations and Equivalents 553

Selected Additional Reading 554



Part 1

Nutrition for Good Health

Chapter 1. Your Food Habits

Chapter 2. Is Our Food Safe to Eat?

Chapter 3. Food and Your Health

Chapter 4. Introduction to Nutrition

Chapter 5. More About the Nutrients

Chapter 6. Food Choices for a Day

Chapter 7. Controlling Your Weight

Chapter 8. Meeting Special Food Needs

Chapter 9. Planet Earth: Enough Food for All?



Chapter 1
Your Food Habits

To help you to . . .

- **Understand why people eat.**
- **Analyze the reasons for differences in food customs among various cultures.**
- **Identify the factors that influence your food choices.**

Why do people choose to eat certain foods and not others? This question has often fascinated researchers. For instance, what did you eat for breakfast this morning? What did you order the last time you ate out? *Why* did you select these foods instead of others available in your home or on the menu? You might answer, "They sounded good," or, "I like them." Although these are some of the more common reasons people give for selecting certain foods, there are others, too.

Many of these reasons involve basic human needs and ethnic food customs as well as personal preferences.

Diamond Walnut Growers; Institute of Texan Cultures; National Marine Fisheries Service

Food habits are the result of many influences, including basic human needs and ethnic and family customs.

WHY DO YOU EAT?

Look for these terms
ethnic foods
hunger
nutrients
starvation

People around the world eat to meet some of their basic human needs, both physical and psychological. These include needs such as survival, security, the sense of belonging, self-esteem, aesthetic appreciation, and adventure.

Survival

Food is one of the basic necessities for survival. It contains *nutrients*—substances the human body must have to help it grow, to repair itself, and to give it energy.

Hunger is the need for food in order to survive. In its extreme form—when people have had no food for long periods of time—hunger is known as *starvation.*

Research has shown that until hunger is satisfied, people can think of little but food. Hunger has a deep and often lasting effect on behavior—the way people act. This will be discussed further in Chapters 4 and 6. Children who come to school hungry, for instance, find it difficult to concentrate on their studies. Because they have so little energy, they have no interest in what goes on around them and cannot take part in school activities. School breakfast and lunch programs in the United States have helped thousands of youngsters to become healthier and happier, and have also helped improve their abilities to learn.

Security

Security is another basic human need. To be secure means that a person feels safe and free from care regarding the basic necessities of life, such as food, clothing, and shelter. A



Most people enjoy entertaining friends. Food helps to create a warm feeling of hospitality.

supply of food for the future not only helps people to feel secure but it also enables them to concentrate on other important activities. If the food supply is threatened, however, people and nations become uneasy. For instance, if a food shortage is forecast in newspapers and on radio and television, some people may hoard that food to insure their own supply.

Sense of Belonging

Another human need is the feeling of belonging—of being accepted and valued by others. Having friends not only makes people feel secure but it also gives them a sense of belonging. Food is important in helping people fulfill this need because it can create a warm feeling of hospitality. In such a friendly atmosphere, people may find it easier to socialize with each other. This can be especially true if some of them are strangers to the group. Have you ever attended a social gathering where many people did not know each other? The conversation may have been polite but somewhat strained. However, when the food was served, it became a topic of conversation—people tasted the different dishes, discussed them, and seemed more relaxed.

Self-Esteem

Another human need is that of self-esteem—the opinion people have of themselves. Food is used by many to improve their self-esteem. Some, for example, entertain friends elegantly—at home or in fancy restaurants—introducing them to new and unusual foods. Some may develop a reputation as excellent cake bakers. Others may specialize in preparing *ethnic foods*. These are typical foods from other cultures, such as moussaka from Greece or tortillas from Mexico (page 434). People may enter food contests as a challenge to see who is the best cook.



California Tree Fruit Agreement

People who love beauty often use food to create artistic masterpieces.

Aesthetic Appreciation

Food can also meet the need for aesthetic appreciation—the love of beauty. Many people turn ordinary recipes into artistic masterpieces because they love beauty. They not only consider flavor, nutrition, and texture when planning a meal, but they also think of the aesthetic appeal. Thus they take special care about the color, shape, and arrangement of the food they prepare.

Adventure

Some people satisfy their spirit of adventure by exploring exotic food customs from all parts of the world. For instance, they may delight in cooking on a *wok,* an Oriental frying pan. They may spend hours in preparing gourmet foods that involve intricate skills such as boning a chicken. Some may concentrate on one type of ethnic food. They may even become authorities on the food customs of that country.

Let's Explore and Report

- Use resources in your local library to find what kinds of cooking contests, local and national, are held each year. How do they relate to people's basic needs?
- Bring to class magazine and newspaper articles that give ideas for party foods. How do they meet people's needs?

HOW DID FOOD CUSTOMS ORIGINATE?

Look for these terms

Buddhism
caste system
Christianity
ethnic groups
ghee
Hinduism
Islam
Judaism
kosher
staple food
superstitions

All *ethnic groups*—people belonging to specific cultures—have their own food customs. As cultural groups developed over the ages, they formed their own living patterns, including food customs. Each group spelled out what the people could and could not eat, how the food was to be prepared, and when it could be eaten. These customs helped set the group apart from the others and helped give the people an identity.

When people leave their families and native lands to move to other areas, they bring with them the food traditions they have known since childhood. Today in the United States, many of these customs are still popular among people who are descendants of immigrants from other lands. The more meaning food customs have, the more they are likely to last.

In most cultures, food customs were created by geographic location, superstitions, religious beliefs, social activities, economics, foreign influences, and technological advances.

Geographic Location

Even though food may be imported, countries depend on locally grown products for their basic or *staple food*. Some foods can grow in only certain types of geographic locations. The most abundant food in an area usually is the staple food. As a rule, the staple food is highly respected and never wasted.

Geographic location determines the climate and the kind of land, both of which influence the type of food available.

CLIMATE

Climate helps determine what kind of food will grow in an area. Certain types of fruits and vegetables, such as bananas and pineapple, grow in the tropics but not elsewhere. Because these plants need warm weather throughout the year, they cannot survive in northern climates where the growing season lasts less than six months.

Rice grows in hot, humid climates. Wheat, however, requires less moisture as well as less torrid heat. Thus rice is the staple in areas such as the Orient. Wheat, on the other hand, is the staple in temperate climates such as the United States and Europe.

In northern climates, people had to plan a food supply for the cold winter months, when food could not be grown. They learned to preserve food by drying, salting, or soaking it in a brine solution. For instance, because Scandinavian countries have so much coastal area, fish is one of their basic foods. Centuries ago, one way to preserve fish and keep it from spoiling was to salt it heavily. Today, salted fish is still popular in Scandinavia, even though modern methods of preservation, such as freezing, are available.

Warm weather made it difficult to keep meat, fish, and poultry fresh, so herbs and spices were used to mask "off flavors." As a result, many countries used herbs and spices in cooking and also developed highly seasoned sauces.

Climate also affects cooking methods. In temperate zones, where winters are generally cold, food is cooked indoors. Homes are built with kitchens equipped with appliances for storing and preparing food.

Do you enjoy food grilled outdoors over an open fire? People living in hot-weather climates cook a great deal of their food outdoors, often over campfires. In many areas, cooking is done both outdoors and indoors. Indians in the southwestern United States, for instance, use outdoor ovens made of clay for baking and stoves inside the house for other cooking methods.

KIND OF LAND

The kind of land in the area has a great influence on the food available. Regions with large coastal areas or with inland lakes and rivers have an abundant supply of fish. Thus countries such as Japan, England, and Greece and the coastal areas in Spain and France are noted for their fish dishes.

Where good grazing land is abundant, people raise cattle for both beef and dairy foods. If pastureland is scarce or hilly, sheep and goats are raised more successfully. For this reason, lamb and goat are basic foods in eastern Mediterranean countries, where good pastureland is scarce.



National Broiler Council

Chicken curry served with rice, originated in India.

Superstitions

Many people believe they will have good luck if they carry a rabbit's foot or bad luck if they walk under a ladder. These beliefs and others like them are known as *superstitions.*

Often, superstitions are associated with foods. Sometimes a food is associated with evil and cannot be eaten.

Many superstitions are connected with sex or reproduction. In some areas, menstruating women are forbidden to touch certain foods, such as cows or milk. Often they are isolated from the rest of the group during their menstrual period. Boys entering adolescence are permitted to eat only specific kinds of food.

In some cultures, certain foods are considered dirty or inedible while in other cultures the same foods are treated as delicacies. Corn, for instance, is one of the most popular foods in the United States. Perhaps you enjoy corn on the cob, corn bread, or creamed corn. Many Europeans, however, consider corn only as food for swine.

Insects such as grasshoppers, beetles, and grubs are prized as delectable foods in some cultures. This may not sound too appealing to you. On the other hand, in the United States, gourmet restaurants and the more elegant steakhouses usually offer escargot as an appetizer. Escargot are snails, generally cooked in a garlic butter sauce.

In the Orient, cow's milk is considered dirty and is not used except on doctor's orders. "Milk" in the Orient usually means a liquid made from soybeans.



International Development Assoc.

Women cook food in a clay pot over an open fire in Malawi, Africa.



FAO

This scene is typical of food preparation in many areas of Mexico. The stove is made of clay.

Cooking Customs Around the World Vary . . .

Women in Tunisia prepare a meal over an open fire just outside a tent, their permanent home.

FAO



In many parts of southwestern United States, Indians bake food in outdoor clay ovens such as these. Stoves inside the homes are used for top-of-the-range cooking.

Ramona Gibbs



Religious Beliefs

Food plays an important part in many religious rituals. Also, many religions prohibit certain foods, either completely or just on certain days.

The five major religions in the world today are Buddhism, Hinduism, Islam, Judaism, and Christianity. Together they influence the food habits of almost every culture in the world.

- *Buddhism.* Most followers of Buddhism live in southeast Asia and in Japan and Korea. Buddhists believe they must follow certain rules of right living, one of which is not to injure or kill anything living. There are no rules against eating animals, just against killing them. Variations exist, however, depending on local customs. In many areas, livestock is raised for sale only. In others, a person can obtain a license to slaughter an animal. Most Buddhists live on cereals, fruits, vegetables, and fish. In some areas, food must be offered to visitors in a home as a sign of right living. However, this also depends on local custom and the food supply.
- *Hinduism.* Most Hindus live in India. Cows are sacred to Hindus and can wander through towns, protected from harm and slaughter. Hinduism is based on the *caste system,* which ranks people in a social order. The kind of food people can eat depends on their rank in the caste system. Foods are also graded according to the caste system or the degree to which they pollute a person's soul. The Brahmins are the highest caste and eat the finest food. They avoid all meat and certain strong foods such as onions, garlic, and turnips. Some castes can eat any meat except beef. In some castes, the color red is associated with blood, so members will not eat red food such as beans and tomatoes. *Ghee* or clarified butter and cow's milk are considered sacred foods. Ghee is preferred for cooking, rather than other fats and oils. Hindus have many fast days, at which times they eat either nothing or only uncooked food.
- *Islam.* This is the major religion in Arabian countries, Africa, and parts of southeast Asia and the Soviet Union. Members, known as Muslims or Moslems, can eat only certain foods, which are considered clean. Blood and swine are forbidden. (You may not think of blood as a food, but people of some cultures do, as explained later in this chapter.) Except for fish and locusts, animal foods must be slaughtered according to a certain ritual before they are considered lawful to eat. Muslims must eat food with the bare fingers of the right hand and with their shoes off. When they are through eating, they lick the plate. Muslims do not discriminate among men. All men, regardless of race, social position, or riches, are encouraged to eat together.
- *Judaism.* The Old Testament established rules regarding foods which Jews can eat. Animals are classified as clean, which may be eaten, and unclean, which may not be eaten. Clean animals are those which have cloven or divided hooves and chew a cud. If an animal meets only one part of the rule, it is unclean. Cows, sheep, goats, and oxen are clean. A pig does not chew a cud so it is unclean, although it has cloven hooves. Meats and dairy foods cannot be eaten together at the same meal. Only fish with scales and fins may be eaten; shellfish and eels may not. Lawful foods must be *kosher*—they must be processed and prepared in a prescribed manner. Certain foods have religious symbolism, some of it related to the exodus from Egypt and the 40 years of wandering in the wilderness. *Passover* is an eight-day festival commemorating the flight of the Jews from Egypt. *Chanukah,* the Festival of Lights, is a family holiday celebrated for eight days late in the year. This is a traditional time for giving gifts and for foods such as *latkes,* or potato pancakes. The Jewish *Sabbath* or day of rest begins at sundown Friday and continues to sundown on Saturday. Because it is a day of rest, no work, not even cooking, is permitted. Thus food must be cooked ahead of time, usually on Friday.



FAO

School lunch in Upper Volta, Africa. This student eats a meal provided by the school as part of a nutrition program to cut down malnutrition. She solves the problem of what to do with her school briefcase by balancing it on her head—a traditional method of carrying objects in many parts of the world.

• *Christianity.* The New Testament did not establish food restrictions as did the Old Testament. Food is important in terms of the Last Supper, when bread and wine were served. However, over the centuries, major churches developed their own food customs. Roman Catholics, for instance, do not eat meat on Fridays during Lent, the six-week period preceding Easter. The Eastern Orthodox Christians have numerous fast days during the year, at which times they eat no animal products such as meat, milk, butter, cheese, or fin fish. The Seventh Day Adventists believe that good health can be had by eating the right kinds of food and getting proper exercise and an adequate amount of rest. Most of them are ovo-lacto-vegetarians. They eat fruits, vegetables, cereals, eggs, and milk and dairy products. Easter and Christmas are generally the most important holidays in the Christian religion. Different churches and ethnic groups have specific foods traditionally served on these holidays.

Social Activities

Many food customs are based on social activities. Others relate to special events in the life cycle, such as birth, marriage, and death.

The world over, food is a sign of hospitality. In most cultures, food and beverage must be



American Lamb Council

During Chanuka, the Festival of Lights, Jews exchange gifts and light a candelabrum called a *menorah*. A lamb roast with fruit is typical of the food served during the holiday.



Hallmark Inc.

Christmas is one of the most important holidays in the Christian religion. It is usually the time for family festivities, which include colorful table settings and decorations.

offered to visitors and must be accepted by guests. Not to accept food is considered an insult in many cultures.

In some parts of the Soviet Union, for instance, visitors to a home are greeted by the hostess, who carries a dish of *hleeb ee sol,* bread and salt. The dish, covered with a fine linen cloth, holds a loaf of hearty, dark bread and a dish of salt. The custom originated centuries ago, when food was scarce and peasants poor. It means that no matter how little food the host and hostess have, the guests are welcome to share it. Each guest then cuts off a piece of bread, dips it in the salt, and eats it. This means the guest accepts the offer of hospitality.

In some Eastern European countries, people visiting a home where someone has died are offered round foods such as hard-cooked eggs or boiled potatoes. Round foods, in these areas, are symbols of mourning.

Every culture has festivals for special occasions—at planting time in spring, at harvest time, and to honor historic events. Certain foods are often associated with these celebrations. In countries observing Easter, for instance, the traditional foods are similar to those used in ancient times to honor the goddess of spring. Usually spring lamb and fresh, newly grown spring vegetables are served. At fall festivals, foods harvested later in autumn are traditionally served. In the United States, wild turkeys were bountiful, so early settlers served them at their harvest celebrations. Eventually, the celebrations became a national holiday—Thanksgiving—and turkey is still the traditional food for dinner on that day.

Economics

In early days, most countries had two distinct classes—a small group of extremely

wealthy, powerful aristocrats and a large number of poor people or commoners. As a result, two kinds of cooking emerged—extravagant, elegant foods for the wealthy and the meager, usually monotonous cooking of the common people. For instance, flour for the wealthy was always whiter and finer, while the common people used coarse, whole-grain flour. As a middle class evolved, characteristics from both types of cooking merged and often turned into national dishes.

Centuries ago, most commoners grew food for sale. They sold the best and most expensive food and kept what was left. Thus recipes developed for every edible part of an animal. Hog intestines were made into casings for delicious sausages, using meat from the feet, head, and organs of an animal. Head cheese, for instance, was not a cheese but a sausage made from the edible parts of a pig's head. Seasonings, different combinations of meat, and assorted methods of processing the sausage added variety to what would otherwise have been a monotonous diet.

Unless it was forbidden by religion, many ethnic groups used blood as food. In parts of eastern Europe, highly-seasoned blood sausage was made from animal blood and cereal such as barley or rice. In Poland, a nutritious soup, *czernina,* was made with duck blood, prunes, and other dried fruits. In Germany, blood and giblets from the goose were stewed with dried fruit such as prunes to make *schwarzsauer,* a stew. All of these foods are still popular today.

Foreign Influences

Food habits were influenced by foreigners, even in early days. Great wars have been fought off and on for thousands of years. As one country conquered another, the victors brought with them their favorite foods. For instance, the early Persians were noted for their thin, tissue-like pastry. The Turks adopted the pastry method and made *baklava.* As the Turkish Ottoman Empire spread to southeast Europe in 1453, the Hungarians adopted the thin tissue-like pastry to make *strudel.*

Tomatoes and pimientoes, typical foods in Spain and Italy, were unknown in Europe for centuries. When the Spanish Conquistadors conquered Mexico, they discovered these foods and enjoyed them so much they sent seeds to the homeland. Soon, tomatoes and pimientoes spread throughout Europe.

Almost every country in Europe has at one time or another been invaded and occupied by its neighbor. Thus foods are often similar in adjoining countries but are called by different names. For example, a cooked dumpling filled with mashed potatoes, cheese, or meat, is prepared in both Poland and the Ukraine. In Poland, the dumplings are called *pierogi* and in the Ukraine, *varenyky.*



Institute of Texan Cultures

Participant in ethnic festival proudly shows her contribution—Polish sausage or *kielbasa* and dumplings or *pierogi.*

Technological Advances

Improved communication and transportation bring people in contact with different food customs. In addition, modern processing and storage methods make foods from many countries more widely available. As a result, food habits in some areas of the world are changing. In the United States, ethnic foods and restaurants are popular.



United Dairy Industry Assoc.
Many people prefer to eat foods typical of their ethnic backgrounds, such as Mexican tacos.

Food habits of Europeans and Orientals are becoming "Americanized." Hamburgers, steak, and fried chicken are familiar foods, especially in large cities.

Let's Explore and Report

- Identify some of the more common food customs of your own culture. Decide which of the influences discussed in this section could have been the cause for each custom. Compare with your classmates.
- Describe a major holiday your culture observes, along with the foods served. If possible, bring a sample of one of the foods to class.

WHAT INFLUENCES YOUR FOOD CHOICES?

Look for these terms
basic flavors
taste buds

Given a choice, people usually select foods they enjoy eating. Not only is food necessary to maintain life, but it is also one of the pleasures of living.

People choose to eat certain foods instead of others for many reasons. Among these are family customs, flavor, values, emotions, advertising, and new food trends.

Family Customs

The food customs of your ancestors—your grandparents and great grandparents—have influenced the type of food your family now serves. Food customs within a family are part of the eating habits taught to young children. At an early age, children learn to eat what their families serve and say is good for them. Scientists report that children's eating habits are well established by the time they are four years old and almost firmly set by age nine. Can you see how important a family's influence is in developing a child's food habits?

Because families tend to hold on to favorite and familiar foods, many people continue to eat foods typical of their ethnic backgrounds. Even though two or three generations of a family may have been born in the United States, traditional ethnic foods are still popular. In many families of German descent, for instance, sauerkraut, sausage, and dumplings continue to be favorites. Italians are likely to base their meals on pasta.

Besides eating ethnic foods, families often have special customs of their own. At Thanksgiving, for instance, perhaps a special dressing must be prepared for the turkey. A birthday might call for a certain kind of cake that is always baked for such occasions. Picnics may mean still another food treat, such as baked beans.

Flavor

Have you ever thought about how you taste the flavor in food?

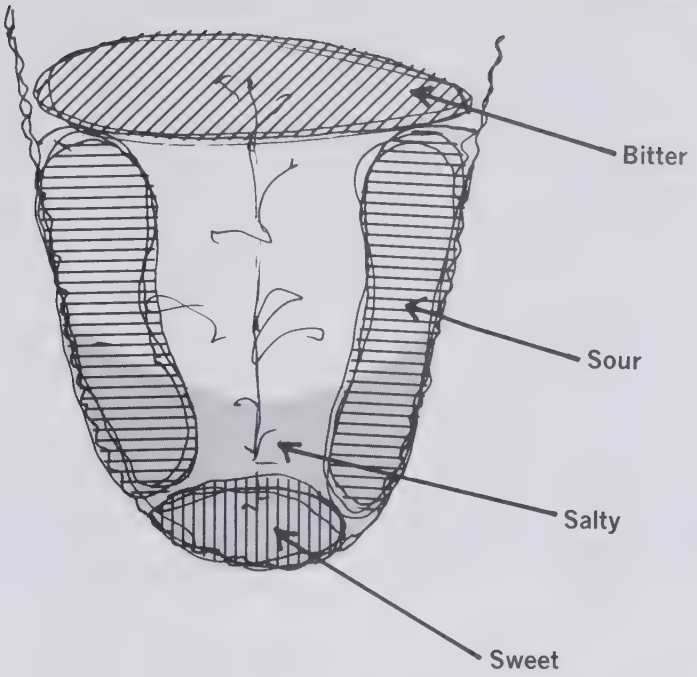
A person can usually taste four *basic flavors*—sweet, sour, bitter, and salty. Tasting these flavors depends on two parts of the body—the mouth and the nose—although other senses may also be involved.

Look at your tongue in a mirror and notice the many tiny dots, bumps, and craters. Each of these has an average of 250 *taste buds*—the tiny organs that taste flavor.

Taste buds are arranged so that certain parts of the tongue are sensitive to specific flavors. Sour flavors are tasted by the edge of the tongue, sweet on the tip, and bitter at the back. Salty flavors are tasted on both the tip and sides of the tongue.

While only the tongue has taste buds, the whole mouth judges food through touch. The lips, teeth, gums, and lining of the mouth feel the texture of food. In addition, some foods cause the mouth lining to pucker up. Others give the sensation of being "hot," such as chili peppers. The tang of a sharp cheese is felt by the mouth.

As said earlier, the flavor of food depends not only on the tongue but on the nose as well. Have you ever had a cold and couldn't taste what you were eating? That's because your nose was blocked and your sense of smell was not functioning. The sense of smell is tied in with the sense of taste, although scientists have not yet determined exactly how this works.



The human tongue can taste four basic flavors—bitter, sour, salty, and sweet.

Besides helping the tongue to taste, the sense of smell is also important to your enjoyment of food. The aroma of a flavorful food can whet your appetite and make you look forward to eating. If a food smells good, it usually tastes good, too.

Values

Values refer to the relative importance of things in a person's life. For instance, how important to you are time, health, appearance, money, and friendships?

Some people place a high priority on time. They prefer to buy convenience foods to save time, even though this sometimes costs more than preparing the meal from scratch with raw ingredients.

Other people keep their health uppermost in mind—so much so that they believe unusual claims made by any "health food" faddist. They spend large sums of money on special food and vitamin pills that they are convinced will make them healthier.

People who value their appearance and health are likely to be interested in their diets. They select foods that they believe will help them to be most attractive or strong. Those who

are overweight may limit their choices to low-calorie foods and may even endanger their health by following one of the numerous fad diets.

Often people emphasize economy and buy a food because of its low price. Others prefer flavor over economy and buy a certain brand they like, regardless of price.

Friendships are valued by many people who use food as an important part of the hospitality they extend to others. For special occasions, they often give food gifts such as homemade cake, bread, cookies, and preserves.

Emotions

Your emotions play an important part in your food choices.

Most people, for instance, tend to have definite likes and dislikes when it comes to food. Some like a certain food very hot while others prefer the same food lukewarm. Some like overcooked vegetables, others prefer crispy raw salads. People even vary in the kind of bread they like—some like a soft crust while others like a hard, crunchy crust.

Many times family members have influenced these feelings about food. If green beans seasoned with bacon are served regularly, families accept this flavor as common. They may dislike green beans served any other way.

Food is frequently used to punish and reward, thus causing emotional reactions to certain foods. Children often are given candy or some other sweet if they are "good." Sometimes they are sent to bed without dessert because they have misbehaved. They may not realize it, but parents may encourage a child to like sweets just by giving them as a reward. Sweets are so highly regarded that the average American eats about 100 pounds of sugar a year.

Do you associate certain foods with a happy or sad event in your life? A person may like potato salad because it was always served at picnics. That same person, however, may dislike macaroni salad because it was the favorite food of an unpopular relative.

Other emotions also affect food habits. Some people worry about being late and are always in a hurry. They tend to choose food they can eat quickly, rarely taking time to enjoy it. Many people overeat to release tension and frustration. By contrast, others lose their appetites when they become nervous or anxious.

Advertising

Without a doubt, advertising is one of the greatest influences on food choices today. In newspapers, magazines, and store windows, on buses, billboards, radio, and television, companies praise the foods they want to sell. Every year, over $1 billion ($1,000,000,000) worth of food advertising appears on television alone.

In the preceding pages, some of the basic reasons for food choices were discussed. Advertising and market research agencies have analyzed these and many more reasons very carefully. They know that if their products meet these needs, they will sell better. Thus advertising often tries to convince the consumer that the products will fill certain human needs.

For example, let's take the fact that most people select food because they think it tastes good. Next time you watch television, notice that food advertisers will probably praise the flavor of their products, whether the food is nutritious or not.

Advertisements often appeal to the use of food for hospitality, such as cheese and crackers for party snacks. Others appeal to security—"Buy a large supply so you'll have plenty on hand."

Food experts claim that television commercials aimed at children, especially those promoting sweets, have an undesirable influence. In the child's make-believe world, television shows give a feeling of authority. Naturally, this feeling is carried over to the commercials. Children are too young to be able to judge television commercials. Perhaps you know of children who insist their parents

buy certain products because they were advertised on a favorite program.

Advertising, of course, has played an important part in the growth of the economy. Without it, many of the foods you enjoy today would not be available. When a new food is produced, advertising introduces it to the consumers. If there is no demand, the food manufacturer and supermarket cannot make a profit, so the product must be discontinued. Thus advertising is vital in calling consumers' attention to new and existing products.



Lenox

Cheese fondue was commonly served as an after-ski treat in European ski resorts. Eventually it became a fashionable way to entertain, whether people skied or not.

New Food Trends

Just as fashions in clothing change, so does the popularity of foods. A food may be promoted by its manufacturer or it may be the favorite of a specific group of people. Once it is accepted by larger groups, it becomes popular. For instance, cheese fondue was commonly served as an after-ski snack in European ski resorts. As skiing turned into a worldwide sport, the foods associated with it were also accepted. Eventually, fondue parties became a fashionable way to entertain, whether people had been skiing or not.

In the late 1960s, many young people began to use "health" or "natural" foods. As a result, health food stores developed combinations of cereals, nuts, and dried fruit, sold at relatively high prices. As these "natural" cereals gained in popularity, food processors entered the scene. Soon "natural" cereal was available on supermarket shelves. It is basically a mixture of cereal, syrup, and brown sugar, without added chemicals, packaged in specially prepared wrapping to preserve it.

Let's Explore and Report

- Study newspaper and magazine advertisements for foods. Clip out and identify at least one advertisement that appeals to you for each of the following reasons:
  - flavor
  - emotions
  - family customs
  - values
- Which of your favorite foods were introduced to you by advertisements? By your family background? By friends and relatives?
- Name at least one food you dislike and give a possible reason for your feeling.
- Experiment with your taste. Use a slice of lemon and some sugar. Put lemon juice on different parts of your tongue. Where do you taste it? Do the same with sugar.

What Would YOU Do?

- You have been asked to help students from foreign countries learn about food customs in the United States. The students come from Chile, India, and Turkey.





Chapter 2

Is Our Food Safe To Eat?

To help you to . . .

- Understand why food additives are used.
- Know how food additives and contaminants are controlled.
- Appraise the truth behind food fads.
- Recognize how food quacks operate.

Although the United States has the most abundant food supply in the world, some people question whether all of it is safe to eat. They are concerned that some additives used in food may be dangerous to health. Other people worry about chemicals and other substances that find their way into the food supply. Some people are so fearful they believe exaggerated statements made by food quacks. Have you any doubts about our food being safe to eat?

FDA

From newly grown food to the processed product, both industry and government share responsibility for the quality of the food consumers buy.

WHAT ARE ADDITIVES?

Look for these terms

additives
Food and Drug Administration (FDA)
Generally Regarded As Safe (GRAS list)
regulated food additives
shelf life

An *additive* is a substance added to a food product for a specific purpose. Additives are used for such purposes as preserving foods, adding nutrients, or giving color and flavor.

Food additives are not new. For centuries, people have used additives such as salt, smoke, and spices to preserve food or to flavor it.

Years ago, people grew all of their own fruits and vegetables. They had only to step into their gardens for a fresh supply of foods in season. They canned large quantities for use during the winter months. Today, in this industrialized era, few people can grow their own food supply. They depend on farmers and the food marketing industry for a plentiful variety of good-quality products.

Food is grown commercially in those areas of the country that can produce the highest quality and quantity at the lowest price. Southern states, for example, grow citrus fruit while the Midwest is the grain-producing area. A vast transportation system carries the food to markets throughout the country. First, however, most of the foods must be processed to preserve them long enough to reach consumers. Additives help to keep some of these foods at their peak of flavor and appearance.

Without some additives, you would have to rely on locally grown foods. This means you

would be limited to only those in season. Most of them would have to be eaten while still fresh.

What Additives Do

Altogether, over 1,800 additives are used today. They fill several basic purposes:

- *To add nutrients.* Sometimes nutrients are added to foods to improve the nutritional quality. Some of these additives include vitamins A and D, thiamin, niacin, riboflavin, ascorbic acid, and iron.
- *To give flavor.* Additives are used to enhance the flavor of food. Some fresh foods, for instance, vary in flavor from one growing season to the next. Flavorings make sure that a product such as canned cherry pie filling always has the same flavor. Some additives used for flavor include spices, herbs, amyl acetate, and citrus oils.
- *To preserve food.* Most food is usually processed months before it is eaten. Because many of these foods are perishable, they would spoil in a short time without additives. Thus additives help the *shelf life* of the food—the length of time it holds original flavor and quality. Calcium propionate, for instance, keeps bread from getting moldy. Some of these additives include propionic acid, ascorbic acid, sorbic acid, sodium and calcuim salts of propionic acid, butylated hydroxyanisole, and butylated hydroxytoluene.
- *To keep texture.* Every food has a certain form or texture people are accustomed to. Some foods can lose their texture easily when processed. With the use of additives, pickles stay crisp and whipped mixtures such as dessert toppings remain light and fluffy. *Emulsifiers* keep oil mixtures well blended so salad dressings do not separate. Some of these additives include lecithin, agar-agar, methyl cellulose, and gum arabic.
- *To give color.* Processed foods frequently lose their natural color. To make the food look appetizing, artificial coloring is added. Soft drinks, for instance, are generally given a color typical of the flavor. Would you drink a strawberry-flavored soft drink that was as colorless as water? Some of these additives include food colors, carotene, cochineal, and chlorophyll.
- *To control acidity.* Some additives control the acidity or alkalinity of food. Acids are used to give a certain tartness to soft drinks. Some of these additives include potassium acid tartrate, tartaric acid, sodium bicarbonate, citric acid, and lactic acid.
- *To act as maturing agents.* Some foods, such as flour or cheese, must be aged before they can be used. Instead of waiting for these time-consuming processes to take place naturally, additives are used to speed them up. Some of these additives include chlorine dioxide, chlorine, and potassium bromate and iodate.

How Are Additives Controlled?

According to federal law, all foods sold across state boundaries must be safe, sanitary, and honestly prepared, packaged, and labeled. Government consumer safety officers inspect plants where foods are processed. Scientists test foods, colors, and chemicals in government laboratories to make sure they are safe to eat.

The *Food and Drug Administration* (*FDA*) is the agency which enforces the Federal Food, Drug, and Cosmetic Act. FDA is responsible for regulating all foods shipped interstate, except for red meats, poultry, and eggs. These three foods are the responsibility of the United States Department of Agriculture (USDA).

Before stricter food additive laws were passed in 1958, approximately 600 additives had already been in use. For years, many had been accepted as being safe to eat. These ingredients were classified by FDA as "Generally *R*ecognized *A*s *S*afe," more commonly known as the GRAS list. This list includes substances such as salt, sugar, and spices. Recently, FDA reviewed and tested the additives on the GRAS list to be sure they were safe according to newer, up-

dated standards. Additives on the GRAS list can be used by a manufacturer automatically without getting permission from FDA.

Additives not on the GRAS list are known as *regulated food additives.* Permission to use these must be secured from FDA. If a company wants to use a regulated additive in a food product, it must prove that the additive is safe, will help improve the product, and will not violate the 1958 Food Additive Amendment to the Food, Drug, and Cosmetic Act. The company must test the product and show proof of results to FDA before permission can be granted. This means industry as well as government is responsible for supplying pure, safe food.

Let's Explore and Report

- Read the labels on cured meats such as sausage and snack-type foods. What are the most commonly used additives? What do they do?

CONTAMINANTS

Look for these terms
contaminants
food chain
industrial chemical wastes
pesticides
recall
tolerances

Contaminants are substances that get into food by accident as it is grown, processed, stored, or packaged.



FDA

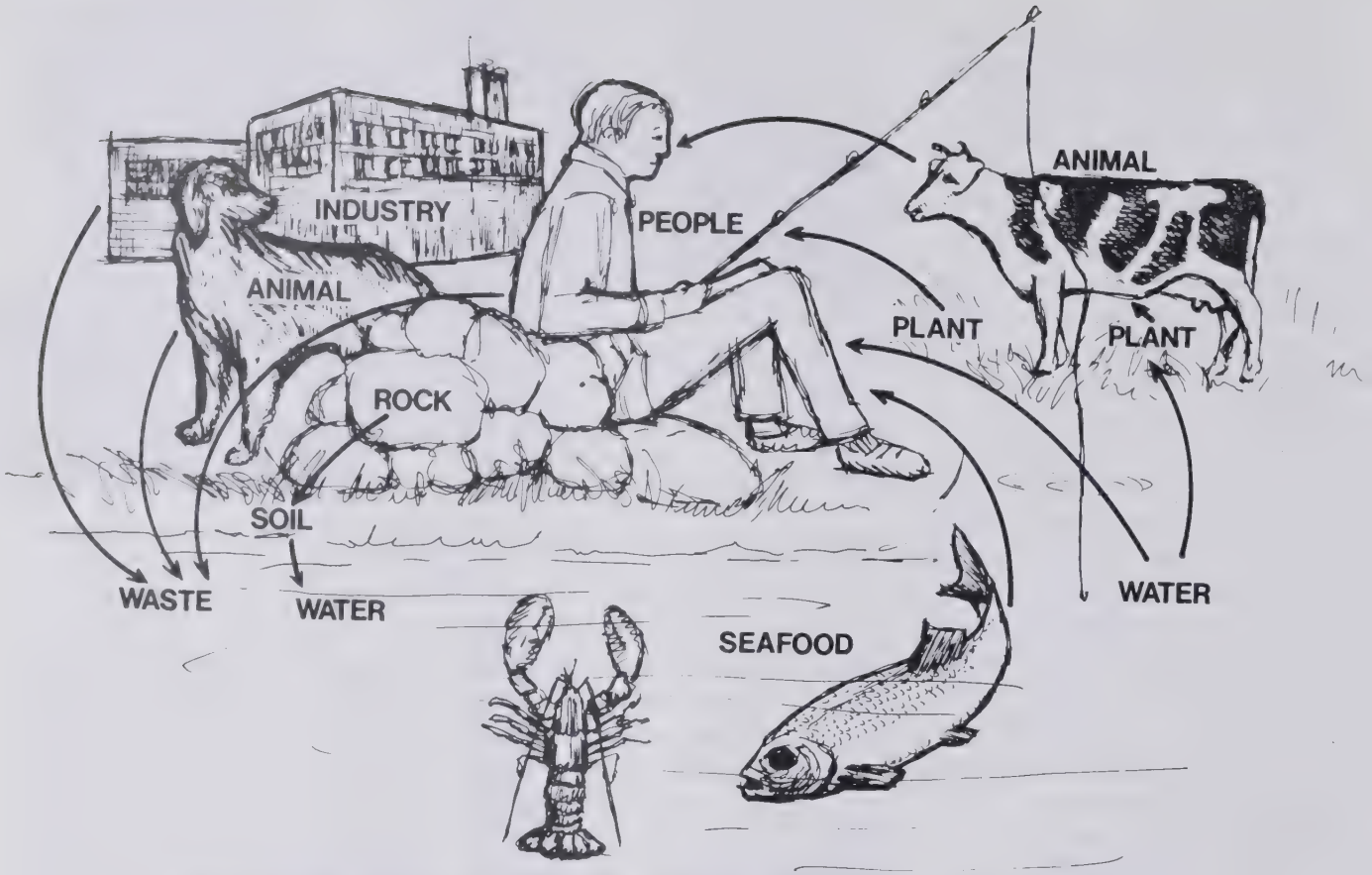
Technician examines food color samples for the presence of undesirable elements.

The process of growing food is a complicated relationship between nature, people, and industry. It is often called the *food chain.* Chemicals travel complex paths from water and soil to plants and animals and then to people. From people and industry, chemicals travel back to water and soil and into plants. The cycle is a continuous one. Some of the substances that enter the water and soil can be harmful to animals and people. Among these are pesticides and industrial chemical wastes.

Samples of wheat are inspected for insect damage.

FDA





Chemicals travel a continuous cycle from water and soil to plants, animals, and people and back into water and soil.

Pesticides

Pesticides are chemicals used on farms to prevent insects and disease from damaging or destroying crops. Some of the pesticides cling to the food and end up as contaminants. Federal laws control the use of pesticides. Before they can be used on crops, pesticides must be approved by USDA. They must be applied properly so they break down into harmless compounds before crops are harvested.

The Environmental Protection Agency (EPA) sets *tolerances* or safe limits for pesticide residues on fresh produce and other crops. A processor who uses fresh foods must be sure that pesticide residues are not higher than these tolerance levels.

Industrial Chemical Wastes

Industrial chemical wastes are chemicals that have been used as part of a manufacturing process and are no longer needed. EPA establishes regulations for proper disposal of wastes. However, some of these chemicals get into the food chain, either through soil and plants to animals or through the water to fish and animals.

The human body uses many of these chemicals in minute amounts as nutrients. These trace elements, as they are called, are discussed in Chapters 4 and 5. However, these same chemicals can be poisonous or

toxic if they reach high levels of concentration. Tolerance levels for the human body have been established for many of these chemicals. If food contains quantities above the tolerance levels, the public is warned not to eat it. Some fish, for instance, caught in waters near industrial plants, showed high concentrations of mercury and were removed from the marketplace.

Both state and federal environmental agencies monitor waste disposal by industries. Cooperative efforts help to keep wastes from polluting land and water.

The pollution problem is worldwide, not one that occurs just in the United States. All over the world, as countries industrialize and populations increase, rivers and lakes become polluted with chemical and human wastes. While governments and industries recognize the problem and are attempting to handle it, the perfect solution is yet to be discovered.



Industrial pollution of waters is a worldwide problem.

Controlling Contaminants

Food processors have developed techniques for controlling the quality of their products. Food is inspected as it is grown, harvested, and processed. Once the food is processed, samples are tested in the company laboratories to be sure the food meets the highest standards for quality and cleanliness. If food is contaminated beyond a certain level, the government takes action to remove the product from the market. It also acts against any food producer found operating under unsanitary conditions.

Many of the actions taken by the government are the result of complaints made by consumers. If you believe a food product is harmful, unsanitary, or mislabeled, or violates the law in some other way, you can perform a public service by reporting it to FDA. Look up the ad-

Food, such as the apples growing in this orchard, is regularly inspected during all phases, from growth to final shipment to the marketplace.



dress and phone number of FDA in your telephone directory. It is listed under U.S. Department of Health, Education, and Welfare, Food and Drug Administration. When you make your complaint, give your name, address, and telephone number, and tell the agent exactly what appears to be wrong.

Food Recall Procedures

When a product is unfit for use, the government can *recall* it or request the manufacturer to remove it from the market. Sometimes the company removes the food on its own without any action from a federal agency. Most industries want to be sure their products meet the highest standards possible.

When a product is recalled by FDA, agents keep close watch to be sure it is removed completely from the marketplace. Products are generally recalled by brand name and specific manufacturing lot number. All products have a number stamped on the container, which identifies them. Some products may have been distributed in only certain areas while others are spread nationwide.

Products that are the most serious threat to health get top priority and wide publicity. For instance, if botulism, a deadly bacteria, is found in a certain brand of canned food, the news media are asked to warn consumers not to buy that particular brand and lot number. Consumers are cautioned to check any containers of that brand they may have at home. The product is removed from all points of market distribution, down to the consumer level.

Let's Explore and Report

- Using resources in your school library and community, find out what industry is doing to control chemical wastes. What are some of the problems?
- Find out what pesticides have been banned recently. Why can they no longer be used?
- Read the labels on the canned and frozen foods in a store to find the kinds of additives used for each product. Bring a list of the products and additives to class.

THE TRUTH BEHIND FOOD FADS

Look for these terms
food fads
food quacks
organic foods

What are *food fads*? They generally involve beliefs in health-giving qualities certain foods are supposed to have. Some of these beliefs are based on myths or misinformation and exaggerated claims.

People who promote food fads are known as food faddists or *food quacks*. Generally, their main interest is personal financial gain, not the health of their customers.

Myths about Food

Food fads are sometimes based on a long history of tradition or misinformation. It's difficult to trace how some of these myths got started. For instance, as far back as 3000 B.C., Egyptians fed garlic to workers building the Great Pyramid. They were convinced garlic was a miracle tonic and would give the men added strength to carry on their heavy labor. Through the centuries, people have believed in the special health-giving powers of garlic. Even today, health food stores sell garlic pills as a cure for high blood pressure.

People sometimes accept many ideas about foods without question. Often these beliefs can be harmful to health. Which of these have you heard?

- *Only young children need milk.* The fact is: People of all ages need a good supply of calcium, and milk is the best source.
- *There is a difference between the nutritive value of brown and white eggs.* The fact is: The color of the shell has nothing to do with nutritive values. According to scientific tests, both kinds of eggs have the same amounts and types of nutrients.
- *Onions will cure a cold.* The fact is: Millions of dollars have been spent on research to

find a cure for the common cold. So far, nothing, not even onion, has been found to cure a cold, although many medications can relieve the symptoms.

- *Fish and milk will make you ill if eaten together.* The fact is: Cream sauce on fish and fish chowder made with milk are popular food combinations.
- *Beets make blood richer.* The fact is: Beets contain vitamins and minerals. However, they do not have enough of the mineral iron to make the blood richer.
- *Grapefruit in the diet every day can break down body fat.* The fact is: Grapefruit is an excellent source of vitamin C. It cannot break down body fat, and neither can any other food. The only way to break down body fat, or lose weight, is to eat fewer calories so the body has to burn up fat for energy.

When someone tells you certain foods should not be combined or a food has special health-giving powers, try to learn the truth. Search for the correct information in the library, or ask your home economics teacher or school nurse.

Magical Cure-alls

Food quacks usually promote their products by making exaggerated claims for them. In themselves, many of the foods are nutritious and can help add variety to the day's meals. However, they do not have the magical qualities claimed for them. Here are some of the more commonly promoted foods.

Fertilized eggs. These are said to contain more and better nutrients than unfertilized eggs. According to scientific tests, both types of eggs have the same kinds of nutrients.

Blackstrap molasses. Faddists claim this food can cure cancer, ulcers, varicose veins, and arthritis. Research does not support these claims. However, molasses contains calcium, phosphorus, and some of the B vitamins. While it is more nourishing than sugar, it is not a miracle cure.

Lecithin. Sold in capsule and powder form, lecithin is supposed to lower blood cholesterol and cure heart disease. Research has proved it cannot dissolve the fat accumulated in the blood vessels. However, because it keeps oil and water from separating, food processors use it as an additive in mayonnaise and salad dressings.

Sometimes such exaggerated claims are made that simple common sense makes people realize they couldn't be true. One manufacturer said that vitamin E could protect the user against air pollution. A promoter of a brown rice and nuts diet claimed it would protect the user from an atomic bomb.

If someone tries to sell you a food by making exaggerated claims for it, be suspicious. Get some dependable information before you spend your money.

Organic Foods

Organic foods are sometimes called "natural" or "health" foods. They are claimed to be grown in soil enriched with natural or organic fertilizers rather than chemicals. No pesticides are used on the crops.

Organic fertilizers are either manure or compost made by rotting leaves and other plant parts. Plants, however, can use only inorganic forms of food such as nitrates, potassium, iron, and phosphate. Organic fertilizers must be broken down by bacteria in the soil into these inorganic elements before plants can use them. In addition, organic fertilizers are more likely to contain salmonella, the bacteria that cause a common form of food poisoning. Plants grown in the soil may also be contaminated with salmonella and may cause illness if eaten.

Prices in health food stores are usually four to ten times higher than those on regular food sold in grocery stores. Why such high prices? The volume of business may be so low the health food store owner has to charge high prices to pay for expenses. On the other hand, the seller may be making excessive profits. Also, the cost of growing organic food is greater so the food must be sold at higher prices. Since the food is grown without chemical fertilizers and pesticides, the yield for each acre may be much lower than normal. If the grow-

ers are to make a profit, they must pass this higher cost on to the consumer. Often there can be no guarantee that organic foods have actually been grown under organic conditions.

Nutrient Supplements

People who make and sell health foods have led some consumers to believe that vitamins and minerals in their "natural" state are somehow superior to those that have been manufactured in a laboratory. This, of course, is not true. The only way scientists can prove that a certain vitamin exists is to identify it and then manufacture it in a laboratory. The manufactured vitamin must perform the same functions as the one that occurs naturally.

Dangers of Food Faddism

Food fads can be dangerous because they may injure health.

People who buy high-priced organic or fad foods might not buy other foods to round out their diets. Thus they may lack many of the basic foods they need for good health.

If the product claims to cure certain diseases, people may have so much faith in it they neglect to get the proper medical help. The product not only does not cure them, but it also does serious injury by letting the disease progress.

Sometimes the product itself is dangerous, but no warning is given on the label. A few years ago, two products, one in capsule form and one as packets of powder, were made from crushed apricot kernels. They were sold as dietary supplements in health food stores.

Apricot kernels contain amygdaline, which has been promoted as a cancer cure by quacks. It has been banned by FDA from interstate commerce. Amygdaline can release hydrogen cyanide, a deadly poison. Normally, the cyanide is present in only small amounts in apricot kernels, not enough to be dangerous. In the two products, however, it was concentrated. Laboratory tests showed that five capsules or two packets could kill a child and twenty capsules could kill an adult. The products were seized by FDA and removed from the marketplace.

How Food Quacks Operate

Food quacks have many different methods of promoting their products. Often the method should make you suspect that the product may not live up to the claims made.

- *Emotional appeal.* Generally, food quacks appeal to fear of aging or being ill or to a desire for beauty, good health, and youth. Scare tactics are often used. They claim that commercially grown and processed foods are dangerous and that processing destroys all nutrients. They insist all diseases are caused by faulty diets. Only their products can save you.
- *New scientific evidence.* By smart merchandising, a food quack can turn a new scientific discovery into a high-profit item. When science announced that safflower oil could lower blood cholesterol levels, smart promoters packaged safflower oil in tiny capsules and sold it in drugstores. The price charged equalled $25 a half liter [pint]. At the same time, grocery stores sold the same oil in bottles at 80 cents a half liter [pint]. When new vitamins are discovered, food quacks go into action and promote high doses as cure-alls. The labels neglect to mention the body cannot use the excess for miracle cures.
- *Advertising.* Food quacks often have their own publications and also advertise in Sunday supplements, magazines, and newspapers and on radio and television. Usually, they have introductory offers with a money-back-if-not-satisfied guarantee. However, few people ever take the time and effort to get a refund.
- *Door-to-door sales.* High-pressure peddlers sell special food preparation equipment, books, vitamins, and other cures. If you are ever a victim of a high-pressure "health" food peddler, remember you are protected by the law. After signing a contract to buy from a door-to-door salesperson, you have

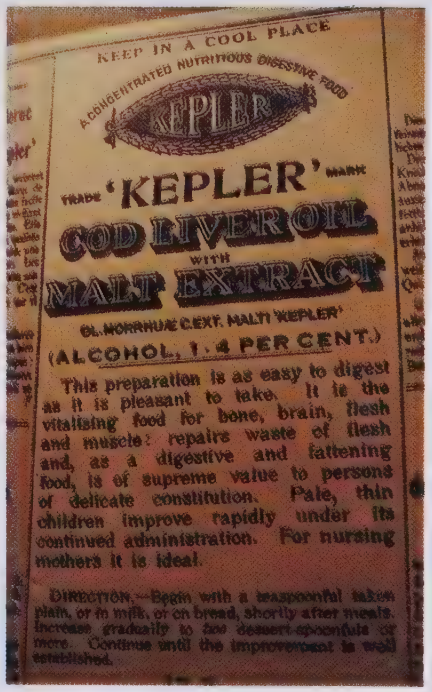
three days to change your mind and cancel the contract.

Finding the Truth

If you are tempted to use "miracle" foods, check with a food expert before you spend your money. The following sources can help you:

- Nutritionists in city, county, and state health offices and social welfare agencies.
- Family physician.
- Home economics teachers.
- School nurse.
- Food editors on local newspapers.
- Local FDA office.
- Better Business Bureau.
- American Medical Association.

The best way to control food quacks is to get the facts rather than be swayed by myths and misinformation. Remember—no single food or nutrient can insure good health or cure disease.




To the Nervous and Debilitated.

DR. ADAM LAURIE'S

CHINESE

LIFE PILLS.

This wonderful remedy, chiefly composed from the essence of a plant that grows in the tea districts of China, the use of which, as prescribed by learned Chinese physicians as an antidote to the effect of eating opium, &c., was discovered by Dr. Adam Laurie, M.R.C.S., while attached to the French and British Embassies at Hong Kong, and by him introduced into European practice.

These Pills take no effect as a Cathartic but act specifically on the blood and nervous centres; are a speedy and infallible remedy for

Neuralgia, Ticdoloreux, Dyspepsia, St. Vitus' Dance, Languor, Lassitude, Depression of Spirits, Nervous Headache, Irritability, Excitement, Excessive Use of Tobacco,

and all diseases from impure blood or nervous derangement, and may be taken with entire safety by the most delicate lady or tender child.

One Dollar per carton of forty pills, or a hundred for Two Dollars—free by mail on receipt of cash, by

GEO. BULPIN, General Agent,
512 Broadway,
Opposite St. Nicholas Hotel, New York.

Institute of Texan Cultures

For decades, food quacks have proclaimed certain food products as "miracle cures."

Let's Explore and Report

- Cut advertisements for health foods from magazines and newspapers. Analyze each claim with your classmates, based on points mentioned in this chapter.
- Obtain information on pending legislation relating to food safety. Identify the advantages and disadvantages of each legislative bill.

What Would YOU Do?

- Your neighbor has been using certain food products she purchases at a health food store. She is so enthusiastic that she convinces you to buy some. When you describe the product to your physician, he says it could be harmful to your health.



Chapter 3
Food and Your Health

To help you to . . .

- **Identify the signs of good health.**
- **Analyze what happens to food in the human body.**
- **Recognize how life styles affect nutrition and health.**

Think about your body for a moment. Although you may take it for granted, the human body is the most precise, complex, and automatic life-support system in existence. Every second, for 24 hours a day, thousands of processes go on in your body. The more outstanding ones include:

- A processing plant, known as the digestive system, turns food into nutrients your body can use.
- A transportation system—the circulatory system—carries oxygen and nutrients to cells and moves waste products away.
- A communications system, controlled by the brain, links your body with the outer world through five senses and a network of nerves. It governs your body processes.
- An automatic self-renewal system constantly builds new cells and maintains existing ones.
- A reproductive system is capable of delivering newborn life into the world.
- A power plant in every cell manufactures not only energy but also heat to keep your body warm.
- A cooling system keeps your body at an average temperature of 37° C [98.6° F.].
- A waste-disposal system gets rid of products no longer needed by your body.

The adult body has 206 bones, arranged in a towerlike structure supported by two relatively small feet. Besides making up the framework for the body, the bones also protect the vital organs—brain, heart, lungs, liver, stomach, and intestines.

The bones have a delicate framework of protein. Minerals such as calcium and phosphorus deposited on the framework make the bones hard and strong. Spongy areas inside some of the bones are called bone marrow. The marrow produces red blood cells.

Over 600 muscles hold the bones together, enabling the body to move. They keep the body balanced while it runs, jumps, and bends. Muscles are made primarily of proteins.

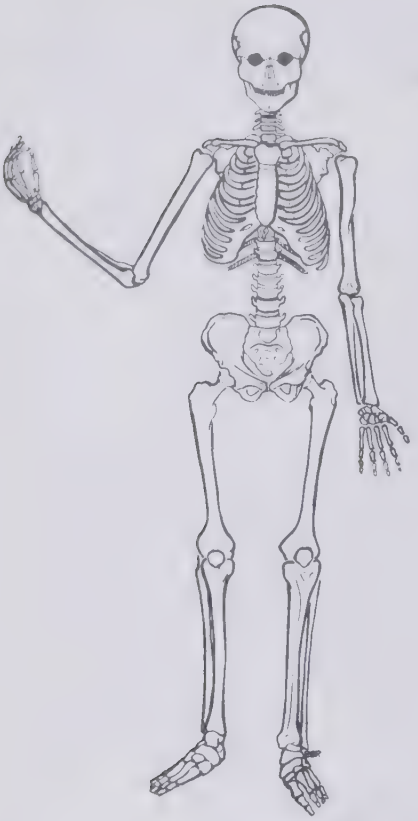
Not all the muscles in the body support the bones. Muscles in the vital organs automatically carry on the life-giving processes. For example, the heart pumps blood. The lungs inhale air and exhale carbon dioxide and water. The digestive system processes food.

To carry on all of the life processes, the body must have:

- A constant supply of oxygen and water.
- A variety of food that provides all of the necessary nutrients.
- Sleep.
- Exercise.

United Dairy Industry Assoc.

The body must digest food eaten, such as this meal, before it can use the nutrients.



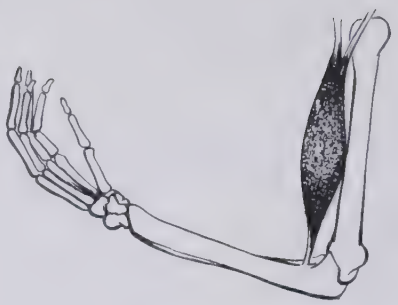
Cleveland Health Museum and Education Center

The adult body has 206 bones, which make up the framework and also protect the vital organs.



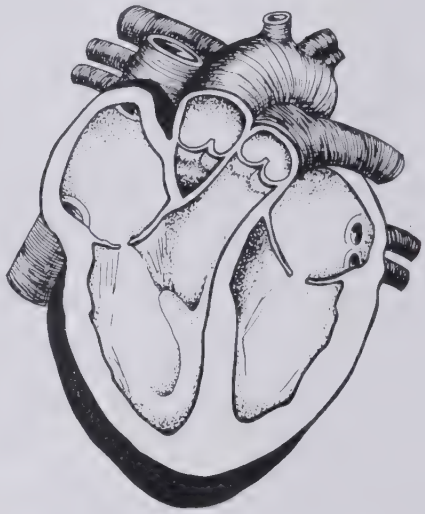
Cleveland Health Museum and Education Center

Cross section of bone. Calcium and phosphorus are deposited on a delicate protein framework to make bones hard and strong.



Cleveland Health Museum and Education Center

Muscles are made primarily of protein and help the body to move.



Cleveland Health Museum and Education Center

The heart is a muscle which pumps blood throughout the body.

All of these work together to help you have good health.

WHAT IS GOOD HEALTH?

Look for these terms

calisthenics
game exercises
insomnia
sedentary

Your health is influenced by your heredity, life style, and the food you eat. From your parents you inherited your health level. You may be an average healthy person or you may have been born with some physical weakness. Within this limit, however, you can generally have good health.

People in good health show certain characteristics, both physical and psychological. Good health includes not only your outward appearance but your behavior, attitudes, and outlook on life as well.

A healthy person can be expected to show these signs:

- Bright, clear, shiny eyes. No sores at corners of eyelids.
- Glossy, firm hair, not easily plucked.
- Natural skin color. No signs of rashes, swelling, or excessive dryness.
- Good posture. Stands, walks, and sits erect.
- Good muscle tone. Muscles firm. Some fat under skin,

but not too much. Can walk and run without pain.

- Normal weight, within body limitations.
- Teeth shining and clean. No cavities or pain in teeth.
- Can rest, relax, and sleep well.
- Energetic and alert. Enough energy to carry out daily activities. Has vitality and shows interest in what is going on.
- Good resistance to communicable illness such as colds.
- Free from signs and symptoms of illness. Appears to be in general good health.
- Generally optimistic, realistic outlook. Happy and smiling. May have occasional brief periods of depression. Does not live in a world of fantasy.
- Has enough emotional stability and maturity to cope with stresses of living.
- Is flexible enough to adapt to change.
- Gets along well with others and enjoys people of all ages.
- Recognizes strengths and weaknesses in human beings, realizing that no one is perfect.
- Can assume responsibilities and carry them out.
- Takes pride in doing both small and big jobs well.
- Has both short-term and long-range goals.

Because all people are different, not everyone can reach the same level of good health. However, exercise, rest, and good nutrition can help you reach the highest level of health possible for you.



Everyone needs some exercise to keep the muscles in usable condition.

Exercise

Some people think exercise is only for the overweight. True, exercise is important in weight control. However, everyone—heavy, average, or thin—needs to exercise. Why? Because the human body must be used or it loses its ability to move.

Have you ever known someone who had a broken arm or leg in a cast for a number of weeks? When the cast was finally removed, the limb was stiff. It had not moved for such a long time that the muscles had become stiff. Sometimes you may sit in a chair for two or three hours, reading, doing homework, or just watching television. When you start to get up, your muscles may feel a little stiff and cramped. Even in such a short time, they began to lose their ability to move. The same thing can happen to the whole body without regular exercise.

Each person has a minimum level of physical activity needed by the body. Below this level, the body can begin to deteriorate. The best exercise is one that uses many parts of the body, gives the muscles a workout, and produces a feeling of healthful fatigue and relaxation.

Fortunately, you need only a small amount of exercise to keep muscles working normally. Physicians estimate that about three hours of exercise a week will give good muscle tone, improve blood circulation, and toughen the heart and lungs. Studies show that people who exercise regularly have better resistance to disease and infection.

Psychiatrists report that exercise can help people get rid of anxieties, tension, and depression. According to the President's Council on Physical Fitness, people who follow a regular exercise routine have a sense of well-being and generally get along better with others.

Many find time to exercise regularly. However, modern living encourages people to lead *sedentary* lives. This means they become inactive, but their appetites continue to demand the same amount of food they would need if they were using more energy. A low exercise level combined with a normal appetite can create many health problems such as overweight and heart disease.

Millions of people today lead sedentary lives. Adults sit at desks the whole work day, seldom moving. Many also spend their evenings sitting, perhaps watching television or attending a meeting or a show.

While lack of exercise was always an adult concern, it has also become a problem among teenagers. Students frequently ride to school and often are not required to do many physical chores around home. Some schools have cut down their physical education programs. Often young people just prefer a life of ease, leaving strenuous exercise to athletes and active sports enthusiasts.

Exercise is not only needed by your body for good health, but it can also be fun. *Game exercises* such as tennis, bowling, or roller skating give you an opportunity to meet people and to have fun with friends. You can also learn a new sport—one that you may enjoy through most of your life.

If you have not been exercising regularly, you may be tempted to just plunge into a strenuous activity. This can put severe stress on your body and may do more harm than good. If you are just starting to exercise regularly, no matter how healthy you are, begin with mild game exercises. Then work your way up toward more vigorous activity.

Walking, bowling, and archery are considered light exercise. Moderate to fairly heavy exercise includes jogging, golf, skiing, skating, and gardening. Running, tennis, and swimming are strenuous exercises.

Some people prefer to do *calisthenics*—special motions that exercise the body. Done daily, calisthenics can give your body the exercise it needs.

Sleep

Sleep and rest are essential for life—you cannot survive without them. Sleep gives your body a chance to restore itself. Although your body slows down when you sleep, many important processes go on.

For instance, why do you feel tired toward the end of the day or after a strenuous activity? When your body burns food to create energy, waste materials collect in your muscles. The process of getting rid of them is continuous. However, when you are active, they build up faster than your body can get rid of them. Sleep allows your muscles to relax and gives your body time to dispose of the accumulated waste materials.

Body cells are replaced more rapidly when you sleep than when you are awake. This is why sleep is so essential for people recovering from illness—it allows the body to renew itself.

Sleep also gives your body time to build up a supply of energy so you feel refreshed and full of vitality when you awaken.

On the average, people spend about a third of their lives sleeping. The amount of sleep needed, however, varies greatly. Although the average adult needs about seven hours, some people can get along on much less. Others may need considerably more. How much sleep do you require?



A good night's sleep helps your muscles to relax. It also gives your body time to get rid of accumulated waste materials and to build up a supply of energy.

Most people rest and relax while they sleep. Others, however, suffer from *insomnia*—the inability to go to sleep. Insomnia has many causes. Sometimes people are too tired to fall asleep. Eating habits can also keep people awake at night. Some may not be able to sleep because they have eaten too much. Others may be unable to sleep because they are too hungry. A room that is too hot or too cold can also keep a person awake.

A healthy person should have no problem getting to sleep if the conditions are right. This usually means a dark, quiet room that is well-ventilated and has a comfortable temperature. Sometimes, however, noise or bright lights cannot be controlled. In that case, ear plugs can be used to reduce the noise and eyeshades to cut out the light.

If you cannot fall asleep, even though the room is comfortable, you might want to try one of these suggestions:

- Stretch your arms and legs or do a few mild exercises to relax tense muscles.
- Drink a glass of warm milk.
- Read a dull book. Don't select an exciting story—it'll only keep you awake.
- Watch a dull television program.
- Take a warm bath.
- Recall beautiful scenes from nature or pleasant events from your past.

Let's Explore and Report

- Ask your physical education teacher for calisthenics you can do at home.
- Select a new sport you would like to learn. Investigate how you would proceed to learn it.

WHAT HAPPENS TO FOOD IN THE BODY?

Look for these terms

chyme
digestible
digestion
digestive tract
duodenum
emulsion
enzyme
esophagus
gastric juices
pepsin
peristaltic waves
pylorus
rennin
saliva
satiety
small intestine
stomach
tongue
villi

Nutrients in food help you have good health. What the nutrients do for your body is dis-



Paul T. Schroeder

If you have problems getting to sleep, try thinking about the beauties of nature.

cussed in Chapters 4 and 5. However, before your body can use the nutrients, food must be digested. The process of *digestion* breaks food down into microscopic particles and releases the nutrients. The nutrients are then used as needed by your body.

Once food is swallowed, the digestion process is automatic. However, you have an important part to play in this process. It is up to you to select the foods your body needs, chew them well, and swallow them.

Digestion

The *digestive tract,* also called the gastrointestinal tract, is a 9 m [30-foot] long, continuous tube, coiled and twisted. It extends from the throat to the rectum. It consists of the esophagus, stomach, small intestine, and large intestine. The tube is surrounded by several layers of thin muscles which create *peristaltic waves*—muscle action that churns the food and pushes it along.

Enzymes play an important role in the digestion process. An *enzyme* is a substance which speeds up a chemical reaction in the body.

MOUTH

As soon as you take a bite of food into your mouth, it begins to digest. The sight, aroma, or even thought of food stimulates the production of saliva—it makes your mouth "water."

By chewing food slowly, you break it up into smaller pieces and mix it with saliva. This makes the food easier to swallow and digest.

You have three different types of teeth that help prepare the food for digestion. In the front of your jaw, the canine teeth and incisors cut and tear the food apart. In the back of your jaw, molars grind the food into small pieces. People with dental problems, such as painful cavities, sore gums, or poorly fitting dentures, usually cannot chew food thoroughly. They may even avoid eating hard or crisp foods they find difficult to chew.

The *tongue* is made up of muscles, although it also contains taste buds on its surface, as discussed in Chapter 1. While you chew, your tongue moves the food around so that it goes from the canine teeth and incisors back to the molars. This helps you chew food thoroughly. Then your tongue helps push it to the back of your mouth so you can swallow it.

The *saliva* in your mouth contains an enzyme, ptyalin, which changes starch into sugar. If you chew a plain cracker thoroughly, it will taste slightly sweet because the starch has been changed into sugar.

ESOPHAGUS

When you swallow the chewed food, the *esophagus,* which is less than a foot long, carries it to the stomach. Food does not fall from the throat to the stomach by the force of gravity, but is moved by peristaltic waves. Gravity has little to do with food going through the digestive tract. The astronauts' digestive systems work very well in a condition of zero gravity in outer space.

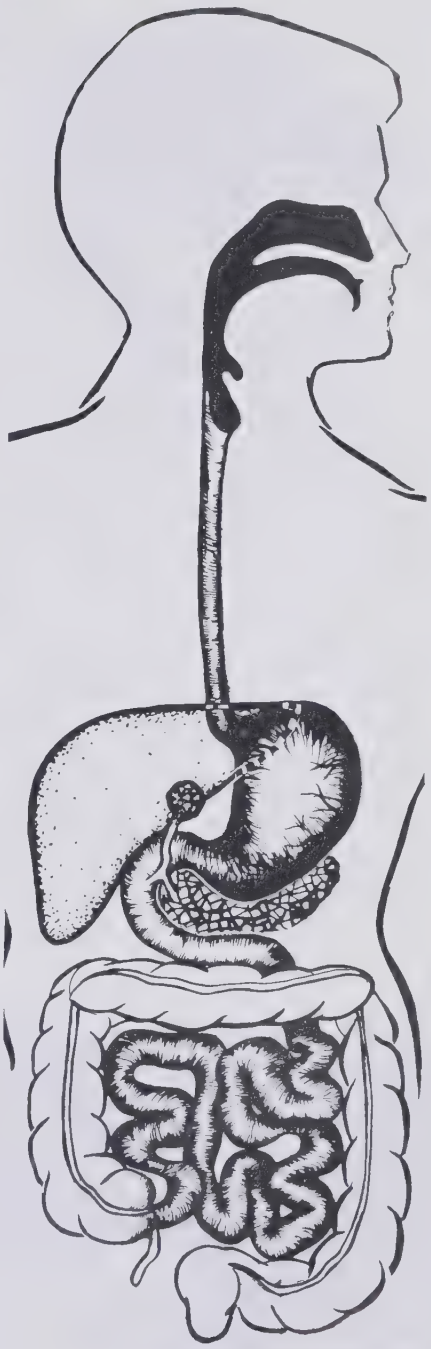
STOMACH

The *stomach* is a hollow, pouch-like structure about 25 cm [10 inches] long and 10 cm [4 inches] wide. It is located on the left side of the body above the waistline and is protected by the rib cage. When empty, it looks like a collapsed balloon. When full, an adult's stomach can hold almost two liters [two quarts] of food.

As soon as you smell, taste, or even think about food, your stomach begins to produce gastric juices. By the time food reaches the stomach, the gastric juices are ready to go to work.

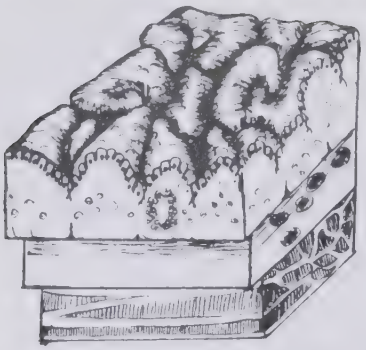
Gastric juices contain hydrochloric acid and the enzymes *pepsin* and *rennin.* A film of sticky mucus lines the stomach walls, protecting them from damage by the hydrochloric acid.

The stomach's function is to prepare the food so nutrients can be absorbed by the small intestine. Through peristaltic waves, food is churned, broken up, and mixed with gastric juices until it becomes a thin, mushy mixture called *chyme.*



Cleveland Health Museum and Education Center

The human digestive tract is a tube, 9 m [30 feet] long. It begins at the throat and ends at the rectum. It includes the esophagus, stomach, and small and large intestines.



Cleveland Health Museum and Education Center

A lining of sticky mucus protects the stomach walls from damage by the hydrochloric acid in the gastric juices.

The enzymes pepsin and rennin work on protein (pages 59, 82–86), breaking it up into smaller units.

How long does food stay in the stomach? That depends on the type of food and the amount eaten. You can probably recall times when you felt hungry an hour or so after eating a full meal. Other times, you may have gone for three or four hours without feeling hungry again.

The feeling of having a comfortably full stomach is known as *satiety*. Foods that stay in the stomach longer delay the feeling of hunger. These foods are said to have a high satiety value or staying power. Foods that leave the stomach quickly have a low satiety value.

Liquids stay in the stomach only 15 to 30 minutes. Carbohydrates (pages 59, 77–80) go through the stomach quickly. If you eat a high-carbohydrate meal such as a fruit salad and a roll, you may feel hungry again in an hour or two.

High-protein foods stay in the stomach longer, while fats (pages 59, 80–82) stay the longest. Someone who has had a pork chop dinner will feel pleasantly full for a longer time than someone who has had spaghetti with tomato sauce.

Fats usually slow down the production of gastric juices as well as the peristaltic waves in the stomach. Thus they stay in the stomach much longer than other foods.

Most meals are usually a combination of carbohydrates, proteins, and fats. Normally, an average meal leaves the stomach in about four hours.

People often speak of some food as being more "digestible" than others. Foods are considered digestible if they need to be broken down only a little or not at all by the gastric juices. They are either liquid or they have been well chewed. As a result, they leave the stomach more rapidly than large pieces



Kellogg Co.

Foods take different times to digest. Liquids such as punch stay in the stomach only 15 to 30 minutes. Carbohydrates such as waffles go through the stomach quickly. Foods high in fat and protein such as meat and cheese stay in the stomach longest.

of food that must be broken down into small particles. Thus chewing aids digestibility because it breaks the food down into small particles that can leave the stomach more quickly. As said earlier, chewing also stimulates the flow of saliva, which softens the food and makes it more easily digested.

Once the food is in small particles, it goes into the small intestine.

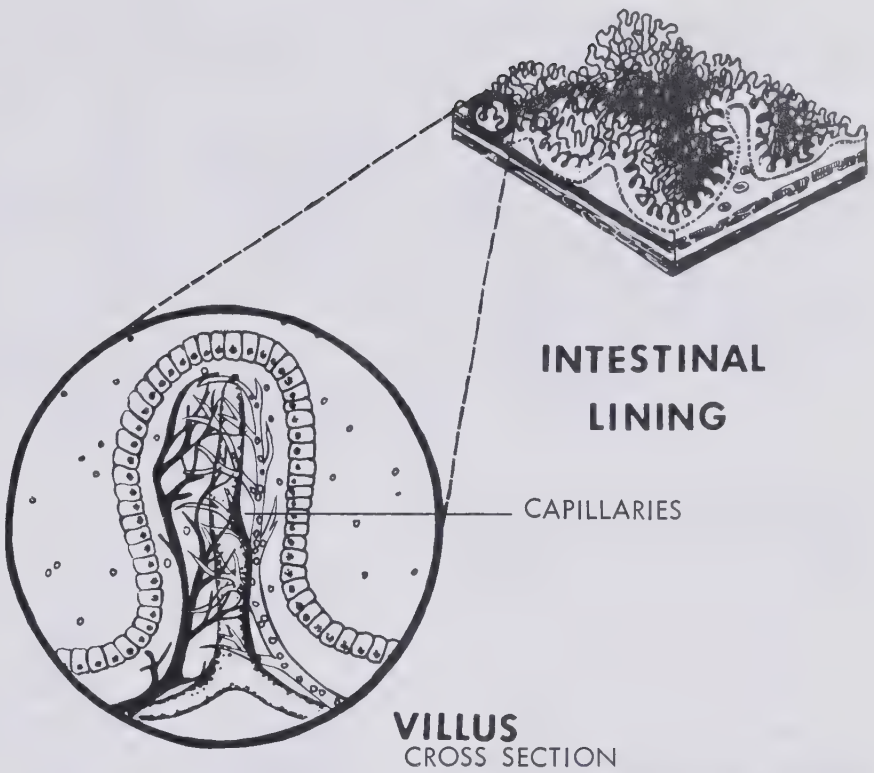
SMALL INTESTINE

When the food enters the small intestine, the nutrients have not yet been separated and cannot be absorbed by the body.

The chyme enters the small intestine through the pylorus—the Greek word for "gatekeeper." The *pylorus* is a small muscle which separates the stomach from the small intestine. It opens and closes periodically. When it opens, it allows a certain amount of chyme to pass into the duodenum.

The *duodenum* is the upper portion of the small intestine, extending about 25 cm [10 inches] immediately beyond the stomach. If any of the food particles are too large, they are not allowed to pass through the pylorus but must remain in the stomach until they are completely broken down. This can cause indigestion, which will be discussed later in this chapter.

The *small intestine* is a coiled tube, about 6 m [20 feet] long.



Cleveland Health Museum and Education Center

The digestion of food is completed in the small intestine. Villi absorb the nutrients, which move to the body's transportation system.

Its walls are lined with villi. *Villi* are minute finger-like projections that line the inner walls of the intestine like a thick covering of velvet. Each villus is 1 mm [$\frac{1}{25}$ of an inch] long. Villi absorb the nutrients as the food is digested.

Hydrochloric acid from the stomach enters the duodenum mixed with the chyme. Usually it is neutralized by alkaline digestive juices so it does not irritate the walls of the intestine.

Bile, produced by the liver, changes fat into an *emulsion*—a smooth mixture of fat and water.

Enzymes from the pancreas have several important jobs. They break protein down into amino acids and complete the digestion of starches into sugars. They also help the bile to digest fats. Enzymes produced by the walls of the small intestine help to carry out these chemical changes.

Once the enzymes have completed their work, the food is digested. The nutrients are ready to be absorbed by the

villi. Basic kinds of foods yield certain nutrients:

Food	Nutrient
Protein	Amino acids
Carbohydrates	Glucose
Fats	Fatty acids and glycerol
Vitamins	Extracted, ready to be used
Minerals	Extracted, ready to be used

Peristaltic waves move the chyme through the small intestine while villi absorb the nutrients. People vary in their ability to absorb nutrients. Normally, however, about 95 percent of the nutrients in the chyme is absorbed. Through the villi, the nutrients move into the body's transportation system, discussed on pages 49–51.

LARGE INTESTINE

About ten percent of the food you eat ends up as waste products. The waste material from the small intestine is moved to the large intestine or colon. Here, the water is absorbed and transported to the kidneys. Eventually, it is eliminated as urine. Solid waste or feces is excreted through the rectum as a bowel movement. The feces contain the remains of the food after digestion, dead and live bacteria, leftover digestive juices, and other waste.

How frequently the body has bowel movements depends on the type of food and amount eaten. Fiber in food absorbs a great deal of water and makes the material passing through the intestines soft. Foods rich in fiber—raw fruits and vegetables and whole-grain cereals and breads—move through at a normal rate. Concentrated foods with little fiber, such as meat, pies, cakes, and white bread, stay in the large intestine a longer time.

HOW FOOD IS DIGESTED

Mouth

Begins digestive process.
Chews food.
Enzyme *ptyalin* begins to digest starch.

Stomach

Gets food ready for small intestine to absorb nutrients.
Peristaltic waves, gastric juices break down food into tiny particles.
Enzymes *pepsin* and *rennin* begin to break down protein.

Small Intestine

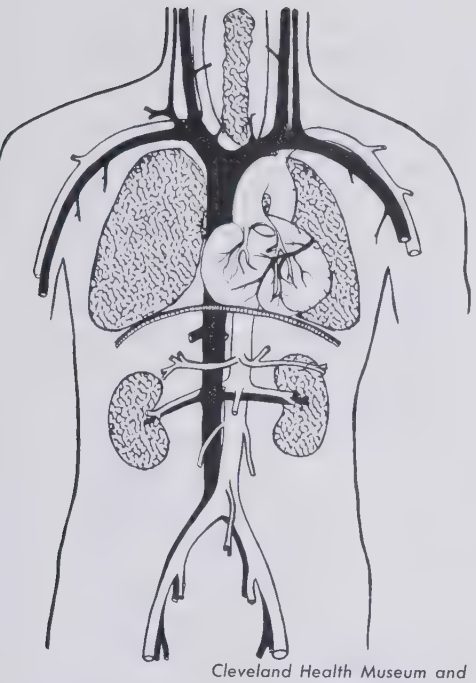
Completes digestion of food into nutrients body can use.

Proteins	Amino Acids	Absorbed by villi and moved to transportation system.
Carbohydrates	Glucose	
Fats	Fatty acids and glycerol	
Vitamins	Extracted	
Minerals	Extracted	

Large Intestine

Eliminates waste products.
Water — Moved to kidneys and excreted.
Solid waste — Excreted.

The human body digests food into nutrients.



Cleveland Health Museum and Education Center

The body's transportation or circulatory system consists of the heart, lungs, and blood vessels. This drawing also shows the kidneys, which help remove waste products from the blood.

Some people think they must have a bowel movement every day to be normal. They take laxatives to stay "regular." Most physicians, however, feel that daily elimination is not necessary for everyone. Instead, they stress the importance of bowel movements at reasonable, regular intervals. What is normal differs from one person to another, depending on the type and amount of food eaten.

Now that the nutrients have been absorbed by the villi, they must be transported to the cells.

Let's Explore and Report

- For several days, keep a record of what you eat and how long it takes you to feel hungry after each meal. Relate the length of time to the food eaten.

Look for these terms

adipose cells
blood
blood sugar
capillaries
deoxyribonucleic acid (DNA)
genetic codes
heart
hormone
Krebs cycle
liver
oxidize
plasma
platelets
red blood cells
ribonucleic acid (RNA)
transfer RNA
white cells

Transportation System

The lungs, heart, blood vessels, and lymphatic ducts make up the body's transportation system. It is also known as the circulatory or cardiovascular system.

Day and night, this system operates a pick-up-and-delivery service at every one of the body's trillions of cells. Oxygen and nutrients are delivered and waste products are picked up. The process never stops as long as you are alive.

Blood is the carrier in the transportation system. Forty-five percent of the blood is made up of red and white blood cells and platelets. The remaining 55 percent is plasma, a fluid in which the cells float.

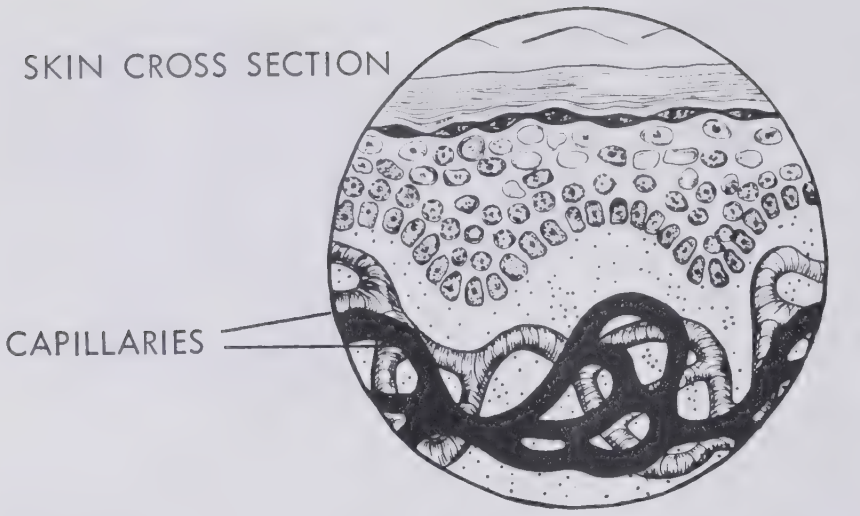


BLOOD CELLS

Cleveland Health Museum and Education Center

About 25 trillion red blood cells carry oxygen to all parts of the body.

Red blood cells or corpuscles carry the oxygen. There are nearly 25 trillion red blood cells in the body. They are so small that if 3,000 of them were lined up single file they would measure less than 2.54 cm [1 inch]. Through a chemical process, hemoglobin in the red blood cells holds on to the oxygen it picks up from the lungs until the final destination is reached. The body uses the mineral nutrient iron to manufacture hemoglobin. If the diet is low in iron, the body cannot make hemoglobin. This means the red blood cells cannot carry enough oxygen to the other cells in the body. The result is anemia.



Cleveland Health Museum and Education Center

The capillary system covers about 96 540 km [60,000 miles] in the average adult. It delivers oxygen, nutrients, and water to the cells and picks up waste products.

White cells are the body's defense system. When strange bacteria enter the body, perhaps through a cut or a virus, white cells surround and destroy them. As white cells are used up, the body makes more.

Platelets help blood clot whenever there is a wound.

Plasma is 92 percent water. The remaining eight percent consists of essential substances, including nutrients such as glucose, fatty acids, amino acids, minerals, and vitamins. A supply of these nutrients is normally present in the plasma, on its way for delivery where needed.

Your *heart* is a muscle about the size of your fist. It pumps blood throughout your circulatory system—arteries, veins, and capillaries.

The *capillaries* handle the pick-up and delivery for each cell. Every one of the body's trillions of cells is on a capillary delivery route. In the average adult, the capillaries cover a route of about 96 540 km [60,000 miles]. If all the capillaries in the average adult body were laid end to end, they would go around the Earth's equator more than twice. Capillaries are the smallest blood vessels in the body—so small that red blood cells must go through them in single file.

TRANSPORTING THE NUTRIENTS

When the nutrients are absorbed by the villi, they move into the transportation system. Fatty acids, along with fat-soluble vitamins such as A and D, move from the villi through a series of lymphatic ducts into the bloodstream. The blood carries them to the cells.

The remaining nutrients—glucose, amino acids, glycerol, minerals, and water-soluble vitamins—are picked up by the capillaries in the villi. They are carried to the liver.

The *liver* is one of the most vital organs in the body. Without it, the body would die in 24 hours. It is also the largest and most versatile organ the body has. It makes bile, which is needed by the small intestine for digestion. The liver filters old red cells from the blood. It manufactures complex chemicals needed by the body such as cholesterol and blood protein. Reserve supplies of glucose, protein, and some vitamins are stored by the liver.

In order to store glucose, the liver turns it into glycogen, a body starch. Glycogen is merely a more compact, convenient form of glucose for storage. As soon as the body calls for more nourishment, the liver changes the glycogen into glucose, and releases it as needed into the bloodstream.

Earlier it was pointed out that plasma always contains nutrients, among them glucose. Because it is a sugar, the glucose in the blood is known as *blood sugar*. Glucose is the basic fuel for the brain and central nervous system.

Amino acids are transported into the liver to be distributed to the blood. The body cannot store them. Usually, the amount of amino acids in the blood begins to fall after four hours.

Fat not needed immediately is stored in the body cells as a reserve supply. The cells which specialize in storing fat are called *adipose cells.*

Glycerol is turned into glucose, either used to produce energy or stored.

FEEDING THE CELLS

Blood pumped out of the heart carries with it oxygen picked up in the lungs. The blood travels through the arteries at about 64 km [40 miles] an hour and finally into the capillaries. Along the way, it picks up nutrients needed by the cells. As the blood gets to the capillaries, it slows down a great deal. It takes blood about a minute to go through 2.54 cm [1 inch] of capillary. Only parts of the entire capillary system have blood flowing through them at any one time. Capillaries open in areas that need oxygen and nutrients and close in those that momentarily do not need them.

Via the capillaries, the blood delivers its load of nutrients and oxygen to the cells. The nutrients flow through the microscopically thin walls of the capillaries and through the fluid bathing the cell. They enter the cell by filtering through the wall.

Via the same route, capillaries pick up the waste products from the cell—carbon dioxide and fluids. On the way back to the heart, the blood delivers the fluids to the kidneys. These are moved out of the body as urine.

The heart pumps the blood to the lungs. Capillaries in the lungs get rid of carbon dioxide and pick up a fresh supply of oxygen. Then the blood starts its trip all over again. An entire circuit can take as little as 20 seconds.

The transportation system is ready to meet special demands by the body. What happens when you see a friend a short distance away and run to catch up with him? Your leg muscles need extra oxygen and nutrients quickly to produce energy. Capillaries in other parts of your body close up because their need is not as urgent. This allows your body to send a larger blood supply to the legs. Frequently, in this type of situation, the capillaries of the stomach and intestine give up their new supply of blood because they do not need it as urgently. On the other hand, capillaries in the stomach and small intestine require more blood after a meal because food must be digested. Have you ever felt drowsy after a heavy meal? That happens because more blood is going to your digestive tract and less to your brain. It's usually a good idea to rest a short time after a large, heavy meal.

How Does the Body Use Nutrients?

Your body uses nutrients, oxygen, and water for three main functions:

- To build and repair cells.
- To keep vital processes going.
- To create energy.

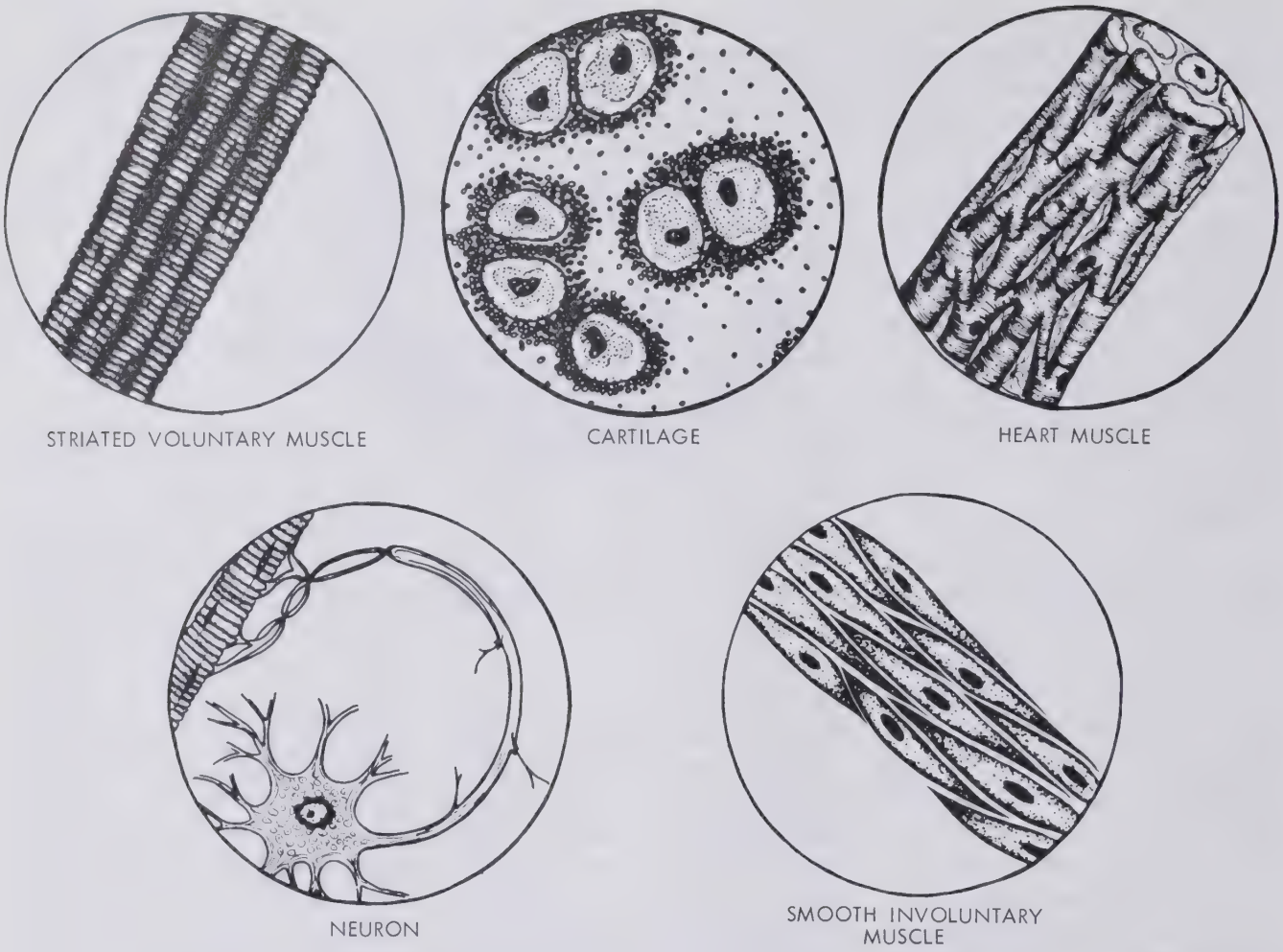
BUILDING AND REPAIRING CELLS

Nutrients are needed to replace worn-out cells, heal injured ones, or grow new ones. As an infant grows into an adult, millions of new cells are built up by the second.

Even in adults, the body must build billions of new cells every day. On the average, a cell lives about 120 days. However, the cell-building process never stops. For instance, the red blood cells last about three months. In every second, about one million red blood cells die. At the same time, in a second, bone marrow produces one million new red blood cells as replacements. The cells of the villi are replaced about every 40 hours. Every three days, the entire digestive tract has a new lining. When any cell is worn out, it breaks itself down into harmless chemicals.

Cells Are Made-to-Order

How does the body know what kind of cell to manufacture? Each cell has a built-in heredity code that can order the exact replacement needed.



Cleveland Health Museum and Education Center

These are but a few of the many different types of body cells. Each must be replaced as it wears out or is damaged or destroyed.

The process of building new cells is a complex one. The chromosomes in the cell are made up of *deoxyribonucleic acid,* usually called DNA—the key to life. The DNA controls the type of cell that is produced. It is estimated that, in the average adult, DNA contains nearly 2 billion *genetic codes,* or instructions for types of cells. Each DNA code is a specific combination of amino acids. When a new cell is needed, the DNA code calls for the required amino acids and arranges them into the necessary proteins. DNA codes have an unlimited number of combinations.

How does DNA work? The DNA code issues instructions for the protein required. DNA develops a negative image of itself in the form of *RNA* (*ribonucleic acid*). The RNA attracts a matching particle called *transfer RNA*. The transfer RNA has a code for an amino acid. Imagine that transfer RNA is shaped like an intricate piece of puzzle. Imagine that amino acids are also shaped like complex pieces of puzzle. Transfer RNA finds

the amino acid that fits—like fitting two puzzle pieces together—and holds on to it. As the amino acids are gathered, they are brought into a specific order. They make one link of a chain of body protein, used to build or repair cells. This process goes on constantly in every cell for repairs, replacements, or new cells. This is why the body needs a good supply of amino acids every day.

The Body Heals Itself

People sometimes tend to think that medicine and surgery alone heal the body. Actually, the body must heal itself. It does this by repairing or replacing damaged cells. Medicine and surgery, through modern techniques, help provide conditions for the healing process to take place. In cancer, for instance, abnormal cells destroy the normal ones. Surgery or treatment can often remove the abnormal cells, allowing the body to heal the damaged area.

How does a broken bone heal? The minute the bone is broken, healing begins. However, to insure that it mends properly, the bone must be set by a physician. Broken ends need to be lined up so they heal in the right position. Usually this means putting the area in a cast so the bone cannot be moved.

As soon as the break occurs, platelets in the broken blood vessels around the bone form a clot. In a few days, minerals from the sharp ends of the broken bone are picked up by the blood. This leaves the bone ends soft and rubbery.

At the same time, a sticky substance forms around the broken bone to hold it together. It contains special cells that deposit calcium and other minerals on the bone ends, strengthening them.

In several more weeks, a soft new bone closes the gap between the broken ends. Calcium and other minerals are gradually deposited to harden and strengthen the new bone.

The amount of calcium the body gets usually determines how long it takes the bone to heal. If the person eats enough calcium, the bone heals at a normal rate. If the body does not get enough calcium, healing usually takes longer. Physicians generally tell people with broken bones to drink plenty of milk. Sometimes calcium supplements are prescribed.

KEEPS VITAL PROCESSES GOING

As pointed out at the beginning of this chapter, many processes essential for life go on automatically. The body needs nutrients for processes such as the communications system and for regulating body temperature.

Communications System

The communications system, or nervous system, coordinates the entire procedure of providing nutrients for the body's cells.

The brain receives signals from the body and from the outside world. It reacts to these messages through the spinal cord and a complex network of nerves. The brain works efficiently, 24 hours a day, directing the work of the body's processes.

Nerves and hormones send messages back and forth between the cells and the brain. *Hormones,* produced by different glands, regulate chemical activities in the body. They relay instructions to one part of the body to meet the needs of other parts.

For instance, if you suddenly have to run, your adrenal gland produces the hormone adrenaline, which tells your heart to beat faster. The action causes the release of glucose from the liver for immediate use. This quickly increases the supply of oxygen and nutrients to the cells so they can manufacture the energy you need.

If you cut yourself, the adrenal gland sends a hormone into the bloodstream, ordering the body to begin making new cells to heal the wound. White cells go into action to fight off any invading bacteria. If someone has a severe wound, shock or unconsciousness may result. This is because blood is rerouted from other parts of the body to the wounded area,

bringing extra oxygen and nutrients to help in the emergency.

Heating and Cooling System

The heat regulator in the brain keeps the body of a healthy person at an average temperature of 37 °C [98.6° F.]. Variation of less than a degree C above or below 37 °C does not necessarily indicate a health problem. Body temperatures are generally higher in the afternoon or evening.

When cells *oxidize* (or burn) nutrients to make energy, heat is given off in the process. Of the energy produced by the body, only about a fourth is used for muscle activity. The remainder turns into body heat.

This means the harder you work or play, the warmer you get. An easy walk may not increase body heat, but fast dancing may make you perspire heavily.

Generally, the body loses heat as fast as it is made. Blood vessels pick up the heat and transport it to different parts of the body. As the body temperature starts to go up, nerves send signals to the brain. Through the nervous system, the brain instructs the sweat glands to produce sweat. Perspiration itself does not get rid of heat. However, when the perspiration evaporates, it cools the body.

You may have noticed that some areas of your body perspire more than others. Although sweat glands occur over the entire body surface, certain parts have more than others. These are the palms of hands, the soles of feet, and the armpits.

People perspire day and night, in all weather. In cold weather, however, the perspiration is so slight it is hardly noticeable.

Besides water, perspiration also contains sodium chloride (salt). Hot weather or strenuous exercise may make people perspire so heavily that they lose unusually large amounts of salt. In that case, they must add salt to their diet to replace what is lost.

What happens when you feel cold? Usually you begin to shiver. This is your body's way of manufacturing heat to warm you up. Shivering takes energy, and when the body produces energy it also produces heat.

If your feet and hands are cold, you warm them up by stamping your feet and rubbing your hands. Here again the energy you use creates heat. The activity also helps the blood circulate faster so it is warm when it reaches your hands and feet.

The layer of fat under the skin acts as an insulating material and slows down the rate at which body heat is lost. It may be an advantage in the winter, but it can be uncomfortable in the summer. This is why overweight people are more sensitive to hot weather than people of normal weight—they have a thicker layer of fat which keeps the body from losing heat as quickly as it should.

CREATING ENERGY

To produce energy, cells use fuel they have stored as well as blood sugar flowing by in the capillaries. This lowers the blood sugar level. As a result, the liver breaks down some of the glycogen it has stored and sends it to the blood as sugar. If more fuel is needed and the glycogen supply is running low, fat is taken from the reserve supply, broken down, and used as fuel.

Cells produce energy from nutrients by a complex process known as the *Krebs cycle*. Once the energy is produced, it does not leave the cell but is held by the chemical ATP (adenosine triphosphate). The final release of energy is a team effort involving brain signals sent to muscle cells and the release of calcium from the muscle cells. As soon as the calcium is released, muscle action takes place.

As you can see, it takes time and many steps for the body to digest food and produce energy. Therefore, "quick" or "instant" energy foods cannot give *instant* energy. Food can never be an instant remedy for physical fatigue. However, when you feel tired, food can often give you an instant psychological lift. It also allows you an opportunity to sit down and relax, giving your body a little time to rid muscles

of waste materials and build up energy.

Let's Explore and Report

- Glucose is used for intravenous feeding in hospitals. Using resources in your library, find out how glucose is made for use in hospitals.
- Cut out magazine and newspaper advertisements promoting foods that give instant energy. Find out how long it takes these foods to digest and enter the bloodstream.

HOW LIFE STYLES AFFECT NUTRITION AND HEALTH

Look for these terms
aerophagia
hyperacidity
ulcer

Although the body's digestive system works automatically under normal conditions, circumstances can greatly affect the process. Emotions influence the body's ability to digest and absorb food. Substances such as alcohol and other drugs can also affect the way food is used by the body.

Your Emotions and Digestion

You are probably familiar with some of the effects emotions have on your digestive system. Think back to the last time you were afraid—perhaps you had to give a speech or you were alone at home and heard a strange noise. Suddenly your mouth went dry and you may have had an empty feeling at the pit of your stomach. You may recall a heavy feeling in your stomach when you were depressed, or a tight, cramped feeling when you got very tense. None of this was caused by your imagination.

Using instruments, scientists have been able to study the effects of emotions on the stomach. They have concluded that no food in itself is bad for a healthy person unless it is poisonous or infected by disease-causing bacteria. Generally, digestive upsets are caused by an emotional response to food or to the stress of everyday life.

Scientists found, for instance, that when a person is frustrated, the stomach becomes agitated. When a person is sad, depressed, or disappointed, the production of gastric juices stops. Capillaries close off—the lining of the stomach becomes bloodless and pale, and food does not digest.

When a person is aggressive or resentful, the stomach acts as though it were about to get some food. It produces gastric juices. Capillaries in the lining fill with blood, ready to help cells produce energy to start the stomach churning. Generally, people in this mood don't feel like eating much. Thus the stomach has a large supply of hydrochloric acid in the gastric juices but little if anything to use it on. This creates a situation called *hyperacidity*.

In its more mild form, hyperacidity can cause heartburn. Pain can be felt anywhere from the lower abdomen to the upper chest and even back and shoulder muscles. When the pylorus closes and peristaltic waves in the stomach stop, nausea may result. This could cause antiperistalsis—a reverse wave of peristaltic action. Instead of the food being pushed forward toward the small intestine, it is pushed back the way it came. When this happens just slightly, a person may get a slight amount of chyme coming up into the esophagus and perhaps even the throat. It creates a burning feeling caused by the acid, since the esophagus and throat are not protected by a mucous lining.

The stomach does have a mucous lining that protects it against normal amounts of acid. However, in extreme cases, hyperacidity can cause an ulcer. An *ulcer* is a raw wound that increases in size. Sometimes the amount of acid produced in the stomach may be twice the amount needed for digestion. Without food, the acid may chew at the mucus or even the lining of the stomach. It may get into the duodenum, which has no protective coating of mucus, and attack the walls. Eventually, the person may get an ulcer in either area—duodenal (duodenum) or peptic (stomach).

As the ulcer develops, it causes burning pain. If not treated, it can eat into a blood vessel and start a hemorrhage. It may gnaw right through the wall of the stomach or duodenum.

Ulcers occur more frequently in the duodenum than in the stomach. Men seem to have them more than women do. Studies also show that people who smoke are more apt to develop ulcers than those who don't smoke.

Ulcers can be healed by medication and sometimes by surgery. However, unless patients change their attitudes and emotional reactions to everyday stress, ulcers can come back.

Emotions also change the rate of the peristaltic waves and can affect the length of time food remains in the stomach. Fear slows down the peristaltic action so that food moves more slowly. Anger and hostility speed up the action so much that the stomach "churns with anger." Food is forced through the stomach rapidly and reaches the small intestine before it should, causing indigestion. If a person is depressed, food might remain undigested in the stomach for many hours.

People vary in how they react to their own emotions. When some are depressed, they cannot eat, but others gorge themselves. Individuals who are tense or anxious often eat quickly and neglect to chew food thoroughly.

Overeating, eating in a hurry, swallowing food before it is completely chewed—all can cause digestive upsets.

Your stomach is always the same size. It doesn't shrink if you eat less nor does it increase in size when you overeat. However, if you overeat, the food puts pressure on the stomach walls, making you feel uncomfortably full.

If you have overeaten, or have gulped down a meal without chewing it too thoroughly, not much can be done to help your discomfort. A cramped, sitting position puts internal pressure on stomach and intestines. However, walking activates the abdominal muscles. This may help to squeeze the digestive tract so that the food begins to move normally.

Indigestion may cause people to burp. However, a burp usually is a normal action. Chemicals in the stomach react and produce gas. The bubbles accumulate in the top of the stomach and finally build up enough pressure to float up to the throat as a burp. Under normal conditions, the main cause of digestive burping is *aerophagia* or air-eating. People swallow air all day long—with saliva and secretions that move from nose to throat, and with the food they eat.

Alcohol

Excess drinking can affect the body's use of nutrients. Alcohol causes the body to lose important minerals such as potassium and magnesium, which are needed by the nervous system. This can cause trembling or shaking.

In the stomach, alcohol removes the protective mucus. As a result, the acid in the gastric juices irritates the walls of the stomach. Excessive drinkers usually suffer from indigestion.

Drinking before meals generally increases the appetite. If done over a period of time, it can result in overweight problems. Not only is more food eaten, but the alcohol itself is high in calories as well.

Alcohol also causes dehydration. One estimate is that the body needs 240 mℓ [eight ounces] of water to manage every 30 mℓ [ounce] of alcohol consumed. This can result in losses of the water-soluble vitamins.

Excess drinking often makes people forget about food. They neglect to eat properly and eventually develop malnutrition. People who drink excessively for a long time can develop liver disease.

Drug Addiction

Generally, drugs in themselves do not affect the appetite, Marijuana, however, increases the desire for sweets.

When people form the habit of taking drugs, eating eventually becomes secondary. They can think of nothing but the



Stauffer Chemical Co.

Remember, a pleasant mealtime atmosphere can aid digestion.

next dose. As the person becomes more deeply involved in drug use, less money is spent for food. Eventually, the addicts are too intoxicated to have an appetite or they spend all their money on drugs and go without food.

Malnutrition results. The addicts become run down physically. Cuts take a long time to heal. Addicts often develop liver infections, mononucleosis, and anemia. Fat deposits are burned up, then body protein is used for energy. Sometimes the hair and fingernails fall out. The body breaks out in sores caused by infection from dirty needles. Addicts rob their bodies of vital nutrients by concentrating money and energy on alcohol and other drugs.

Let's Explore and Report

- Obtain information from your local pharmacist on the popular antacids people buy to relieve indigestion. What effect do they have on the stomach?
- Discuss ways in which emotions can be controlled to avoid digestive upsets.
- Plan three meals—one that will leave the stomach quickly, one that will take an average length of time, and one that will stay in the stomach the longest.

What Would YOU Do?

- You eat lunch with a close friend who insists on talking about your mutual problems. As you eat, you can feel yourself becoming tense and anxious.



Chapter 4

Introduction to Nutrition

To help you to. . .

- Identify the language of nutrition.
- Understand how the nutrients work in the human body.
- Recognize how nutrition labeling can help you.

As you prepare for a career, you may find you need to understand the special language used as part of the job. Carpenters and nurses, for instance, have to learn the names and functions of tools, materials, and processes. They must know what they are and recognize the relationship of one to the other.

The same is true of nutrition. By understanding the nutrients and their functions, you can be more aware of how your food choices can help you have good health. Selecting the right kind of food to keep you healthy is a life-long responsibility.

You have probably heard words such as *unsaturated fats, iron deficiency anemia,* and *protein* on television or radio or seen them in newspapers and magazines. How many people do you think understand what these words mean? Along with many others, those words are the specialized language of nutrition.

What is *nutrition?* It can be defined as the food you eat and how your body uses it.

United Dairy Industry Assoc.

Food is made of chemicals the body can use, known as nutrients.

WHAT ARE NUTRIENTS?

Look for these terms

basal metabolism
calories
carbohydrates
empty calories
energy
fats
minerals
nutrients
proteins
thyroid gland
vitamins

Picture in your mind three or four different kinds of foods. Now go one step further. Visualize each food as made up of many different chemicals that your body can use. These chemicals are life-giving materials known as *nutrients.* They include carbohydrates, fats, proteins, vitamins, and minerals.

Carbohydrates are foods from plants—fruits, vegetables, and grains. They are the body's main source of energy. They are also by far the cheapest and most widely used source of energy. (Pages 77-80).

Fats can be either animal or vegetable. They are also a source of energy. Pound for pound, they supply twice as much energy as carbohydrates and proteins. (Pages 80-82).

Proteins are needed by your body to build and repair tissues and to control body processes. They provide amino acids, the "building blocks" your body uses to build cells. If you do not eat enough carbohydrates or fats, your body will use proteins for energy. Animal proteins are higher quality than vegetable proteins because they contain all of the essential amino acids. (Pages 82-86.)

Vitamins are essential to life. They are important parts of



Florida Dept. of Citrus

Carbohydrates include fruits, such as citrus fruits. These foods also contain vitamins and minerals.

many of the enzyme systems in the body. Enzymes speed chemical reactions taking place in your body constantly.

Minerals become a part of your body structure. They can be found in your bone structure, muscles, organs, and fluids. They also help in controlling many body processes.

See the chart, "Know Your Nutrients," on pages 72–75 for more details about these nutrients.

As discussed in Chapter 3, your body needs nutrients to:

- Build and repair cells.
- Keep vital body processes working.
- Create energy.

Keep in mind that nutrients cannot work alone in your body. They need water and oxygen to carry on their processes.

Why Do You Need Water?

Although water is not considered a nutrient, it is essential for life. The body's need for water is greater than its need for food. You can live for about five weeks or more without food, depending on the amount of fat stored in your body. However, you can live only about three days without water.

Water makes up between 50 and 75 percent of the body. It is present in every cell as well as in the fluids.

How does water help your body? All the chemical processes must have water. Once foods are digested, water helps them pass through the intestinal wall into the bloodstream. The blood is mainly water and carries nutrients to the cells, which are bathed in water. Waste products are eliminated from the body in urine, which is mainly water.

Water also serves as the body's cooling system. From Chapter 3, you remember that enzymes help to speed up activities in the body. Enzymes operate best at normal body temperatures. If excess heat is not released quickly, the body temperature rises. Eventually, all enzymes would stop working. As described in Chapter 3, water is removed through the skin as perspiration and helps cool the body. It is also removed through the lungs as part of the breathing process. You can see it when



Adolph's Jeanette Frank Kitchens
Meat contains fat and proteins as well as vitamins and minerals.

you exhale on a cold day. The low temperature causes the warm water vapor in your breath to condense so you see it as a small cloud.

Most people consider fluid in the form of beverages as their main source of water. However, solid foods also contain water in varying amounts. Lettuce has about 95 percent water while meat has about 45 to 65 percent.

How much water do you need? Your body needs a daily supply—enough to balance the amount lost. Thirst is generally a good indicator of your need. Health experts recommend that adults should have at least eight glasses of water daily. Sometimes the body gives off unusually large amounts of fluid, as in extremely hot weather or during strenuous exercise or illness. When that happens, more water is needed to replace the amount lost.

Why Do You Need Oxygen?

Energy is the power your body uses to carry on its activities. As described in Chapter 3, your body produces energy by oxidizing food—using oxygen to burn it.

Energy is measured in terms of calories. A *calorie* is the amount of heat energy needed to raise the temperature of 1 kilogram (a little over 4 cups) of water 1 °C. A calorie can measure the amount of energy available in food or the amount of energy used by the body. (In the metric system, energy is measured in kilojoules [kJ]. A calorie equals 4.2 kJ.)

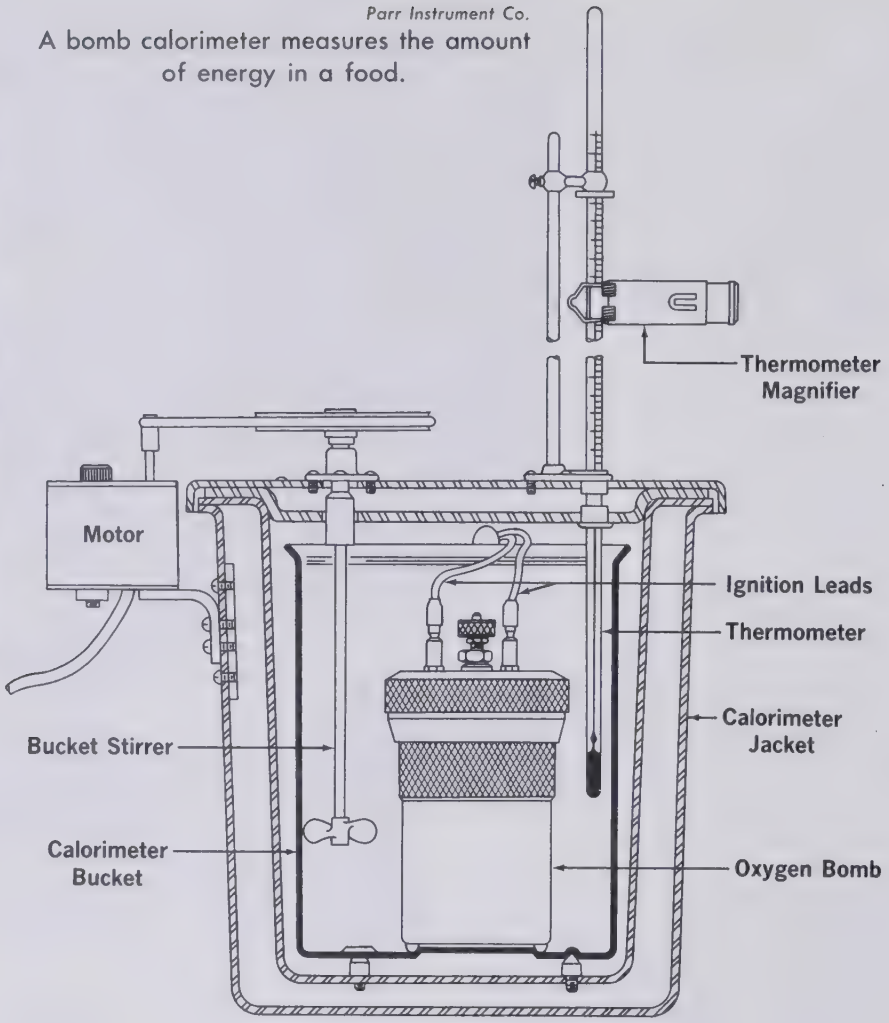
The amount of energy in a food is determined by burning it in a bomb calorimeter. A specific amount of food is placed in a small chamber or bomb that has an electric ignition device and a supply of oxygen. The bomb is lowered into a well-insulated cube containing a



Some leafy vegetables, such as lettuce, contain about 95 percent water.

Parr Instrument Co.

A bomb calorimeter measures the amount of energy in a food.



Oxygen Bomb Calorimeter

specific amount of water. The food sample is ignited and allowed to burn completely. As it burns, it gives off heat, increasing the temperature of the water surrounding the bomb. From the change in temperature, scientists can calculate the number of calories in the food. They have determined that pure forms of nutrients have the following:

Nutrient	Calories	kJ
1 gram pure carbohydrate	4	17
1 gram pure protein	4	17
1 gram pure fat	9	37

The amount of energy your body needs to maintain basic processes is known as *basal metabolism*. Some of these processes are breathing, circulating blood, and building and repairing tissues. Since they go on 24 hours a day, your body uses energy all the time.

The speed at which your body carries out these processes is known as the *basal metabolic rate* or BMR. Everyone's body works at its own speed, so all individuals have their own personal basal metabolic rate. This means energy needs vary greatly from person to person.

BMR can be influenced by several factors. For instance, it can be speeded up or slowed down, depending on how active

the body's thyroid gland is. The *thyroid gland* is located in the neck. It helps control the rate at which cells use oxygen and nutrients. If it works more slowly than it should, it slows down the BMR. This can cause a person to gain weight because fewer calories are needed for BMR. Usually this condition can be controlled by medical help. If the thyroid gland works too fast, it speeds up the BMR. As a result, the body needs more calories than it normally would.

More energy is usually needed for metabolic activity in muscles and glands. Active, muscular people, such as athletes or heavy laborers, have a faster BMR than overweight or less active people do. Since men are usually more muscular than women, they also tend to have a higher BMR.

People over 20 have a gradual drop in the BMR. Thus they need fewer calories as they grow older because of the lower BMR.

The BMR can be measured by a simple test given in a physician's office or hospital. A respiration instrument measures the amount of oxygen inhaled and carbon dioxide exhaled. From this the BMR can be determined.

In addition to energy for metabolism, the body also requires fuel for activities. The amount needed depends on the kind of activity and its duration. If you spend a Saturday afternoon shopping or playing baseball or football, you will use more energy than you would by staying home watching television.

Usually your weight is a good guide to the number of calories you require. If you are healthy and losing weight, you need more calories. However, if you are gaining, you may need fewer calories and perhaps more physical activity. Keeping your weight at a desirable level is discussed in Chapter 7.

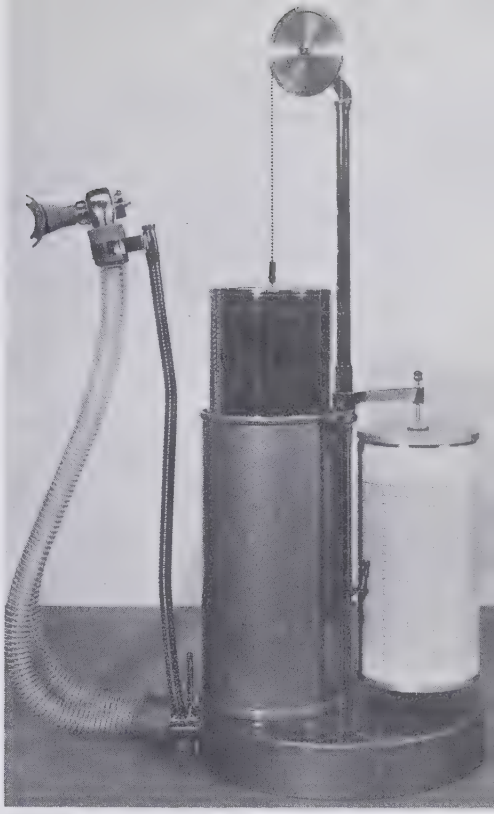
What Foods Supply Energy?

Any food supplies energy. In the United States, on the average, carbohydrates supply about 45 percent of the energy needs, fats about 40 percent, and proteins 15 percent.

Many people in the United States get a large part of their calories from sugar, fats, oils, and alcohol. Since these foods are high in calories and have few, if any, nutrients, they are known as *empty calories*. When people eat too many empty calories, they may not get enough of the nutrients the body needs daily. Eventually, they may develop poor nutrition and health problems.

Let's Explore and Report

- Using library and community resources, find out where your community's water supply comes from. What is done to assure the residents a supply of pure, safe water?



Warren E. Collins Inc.

This respiration instrument measures a person's basal metabolism rate.

HOW DO NUTRIENTS WORK?

Look for these terms

enrichment
fabricated foods
formulated foods
fortified foods
moderation
Recommended Daily Dietary Allowances (RDA)
restoration
trace elements

There are four important points to remember about nutrients:

- Nutrients work together as teams in your body.
- Your body can use only a certain amount of each nutrient.

- As you mature or your life style changes, the amounts and kinds of nutrients you need will also change.
- Scientific research is still discovering new facts about nutrients.

Nutrients Work as Teams

One nutrient alone cannot be responsible for any one function in your body. Nutrients work together as teams. Some, of course, may have more important roles to play, but all are essential for good health.

You may recall a few examples of nutrient teamwork from Chapter 3. While calcium, phosphorus, and other minerals make bones hard and strong, the framework is provided by proteins. Iron and proteins work together to produce hemoglobin, which carries oxygen to the cells. Many nutrients are involved in the complicated process of producing energy. However, calcium is needed to release the energy so the muscles can use it. Without vitamin D, your body cannot absorb and use calcium. These are but a few examples out of hundreds.

Teamwork means your body must have an adequate supply of *all* the nutrients. The only way you can be sure to have all you need is to eat a variety of foods every day. Health experts call this *moderation.* It means that instead of eating large amounts of just a few favorite foods every day, you eat smaller amounts of different kinds.

How Much Do You Need?

Every nutrient has definite functions in your body. Only a certain amount of each is needed to perform these tasks. Most vitamins and minerals are needed in such small quantities it is hard to believe they can contribute to good health. For instance, every day adults need 45 milligrams of vitamin C—that's only $^{45}/_{1000}$ of a gram, and a gram is $^{1}/_{28}$ of an ounce!

If you do not get enough of these nutrients, no matter how small the quantity, your body can begin to run down. Some people, however, think that if a small amount is good for the body, a lot should be much better. Consequently, they overdose themselves with vitamin and mineral pills.

What happens if you get too much of one nutrient? That depends on the nutrient. Vitamins such as B and C are not stored by the body. When the body has all it needs, it gets rid of any extra with other wastes. However, large doses can have ill effects. Excess vitamin C, for instance, may cause diarrhea.

Other nutrients, such as vitamins A and D, are stored by the body. Unfortunately, the body does not limit the amount it stores. If some of these nutrients accumulate in extra-large quantities, they can poison the body. For instance, if children are given excessive amounts of vitamin A, it can stunt their growth. Instead of helping the body, overdoses can create health problems.

The situation became so serious that the government put a ceiling on the amounts of vitamins A and D that can be put into pills sold without prescriptions. Larger amounts of these vitamins can be purchased only with a physician's prescription.

Perhaps you suspect you are not getting enough of the nutrients you need for good health. Instead of wasting money on supplements, check with your physician first. You may have a simple medical problem that is making you feel poorly—one not related to lack of nutrients.

Your Nutrient Needs Change

The Food and Nutrition Board of the National Academy of Sciences-National Research Council has developed a guide of nutrient needs. Known as *Recommended Daily Dietary Allowances,* or *RDA,* it shows the amounts of some of the known nutrients needed. The chart appears in Appendix B.

The allowances were first established in 1943. They have been revised a number of times as new research has become available, and to meet the changes in life styles.

The RDA chart specifies age groups, weights, and heights. It

gives the amounts of proteins, energy (calories), vitamins, and minerals needed daily by healthy people for good nutrition throughout life. The amounts shown are a little higher than those actually needed. This provides a margin of safety for people who may need a little more.

For many reasons, people often require more or fewer nutrients than the amounts shown on RDA. Children, for instance, grow at different rates. Those who grow faster need more food than those who grow more slowly. Adolescents have a spurt in growth that calls for unusually large amounts of food. Taller or large-boned people will need more food. Those who are smaller may need less.

The amount of activity can change nutrient needs. For example, teenagers who are active in school use relatively large amounts of energy. When they graduate and take inactive jobs, such as sitting at a desk all day, they will use far less energy and will need fewer calories.

A woman who is pregnant will need more nutrients than she did before. Whether or not she breast-feeds her baby will determine what kind and how much food she will need after childbirth.

Why would nutrient needs vary for the people shown here?



As you mature through your life cycle, be alert for changes in your nutrient needs. Study nutrition charts and keep up with guidelines offered by health experts. Select the foods you need for your age and activity level.

Nutrition Research Continues

So far, scientists know the human body needs about fifty different nutrients found in food. Of these, about twenty have been researched enough so that science knows how much the body needs daily for good health. Some of the minerals are needed in such small amounts that only traces of them appear in the body. Because of this they are called *trace elements.*

Although a great deal of progress has been made in the science of nutrition, researchers still have much to learn about nutrients, especially the trace elements. They still need to know what some of them are, how they work, how the body uses them, and what foods are the best sources.

Day by day, scientists learn a little more about these essentials for life. For instance, research is just beginning to uncover the roles vitamin E and zinc play in the human body. It is possible that tomorrow another important vitamin or mineral may be identified—one the human body must have daily to survive.

Besides learning new facts about nutrients, research has another important job. It works with industry in improving the nutritional quality of processed foods.

During food processing, some nutrients can be lost or destroyed. Because of this, the government approved a program by which food processors can replace the lost nutrients. According to available research, these foods then have the same amounts of nutrients as they did before they were processed. Replacing nutrients lost in processing is known as *restoration.* Many trace elements may also be lost in processing. However, since little is known about these nutrients, they cannot be replaced, despite the fact they are essential to good health.

Enrichment means nutrients are added to food products to increase their nutritional value in conformity with federal standards. Enriched bread is an example. *Fortified foods* can be either restored or enriched or both.

More and more foods are being fortified. Many of these products are known as formulated foods. *Formulated foods* are those in which ingredients are mixed together to form another kind of food. They include snacks, cookies and crackers, soft drinks, prepared cereals, salad dressings, cake and roll mixes, and beverages other than milk and fruit juice.

Other products are known as *fabricated foods.* They are made from unusual ingredients and used as substitutes for certain foods. Some include meat-like products made from textured vegetable protein, whipped dessert topping made with vegetable oil, and countless others.

Fabricated and formulated foods are an important part of modern living. Recent sales of these foods totaled about $13 million. It is estimated that in a few years, consumers will be buying $23 billion worth a year.

Why are fabricated and formulated foods so popular? Convenience is probably the main reason. For busy consumers, they offer flavorful foods that are filling as well. Besides saving time, they sometimes cost less than they would if prepared from scratch at home. The food service industry is using more and more of these foods because they cut the cost of food preparation but still give customers an acceptable meal.

While many of the fabricated and formulated foods are fortified, others are not. For instance, federal and state laws specify that white flour, bread, rolls, macaroni products, cornmeal, rice, and other cereals must be enriched. The enrichment law does not apply to other baked products such as cakes, cookies, and crackers. Some processors, however, have voluntarily agreed to enrich these products.

Health experts are concerned that overuse of fabricated and formulated foods may lead to poor nutrition. Even if the products are enriched and fortified, they may still lack essential trace minerals which cannot be added.

How can you be sure of getting *all* the nutrients your body needs?

- Eat a variety of foods every day, including some fresh foods such as fruits and vegetables.
- Read the labels. If you are buying fabricated or formulated food, be sure it is enriched.

Let's Explore and Report

- Obtain information on new discoveries made recently in the field of nutrition.
- Read the ingredients on the label of a frozen cream pie. How do they compare with a recipe you would prepare at home?

HOW DOES NUTRITION AFFECT YOUR HEALTH?

Look for these terms
deficiency
food stamps
malnutrition
nutrition labeling
nutrition survey

People who eat the right kinds of food in the right amounts are said to be well nourished. They show the signs of good health discussed on pages 40 and 41.

Poor nutrition can lead to poor health. It can cause skin and figure problems, medical ailments, and tooth decay. Sometimes, however, people who are poorly nourished may not have specific ailments. They may just feel tired all the time, perhaps a little cranky or depressed. Many find it hard to study or concentrate on work or play. They are apt to get colds and other infections and diseases. Small cuts and sores may not heal easily.

A study of industrial workers showed that poor eating habits affected their ability to work. Those with poor food habits were tired all the time and made mistakes easily. They had more job-related accidents and did less work than those with good eating habits. Their attendance records were also poor.

Malnutrition

People who have poor nutrition for a long period of time develop *malnutrition.* This means they show specific physical signs caused by a deficiency or severe shortage of one or more nutrients. For instance, people who do not eat enough foods containing iron develop anemia. They have no energy, they become weak, lose weight, and feel depressed. Those who do not eat enough foods containing vitamin C develop bleeding gums.

Malnutrition can have many causes. In some places, such as the tropics, climate conditions are unfavorable to agriculture. People in those areas cannot grow enough of the right kinds of food. In some countries, even if food is available, many people are so poor they cannot afford to buy it.

Malnutrition can also be caused by too much food. In recent years, overeating and overuse of some nutrients have created serious health problems in the United States.

Some people, for instance, eat excess amounts of sugars, starches, and fats at the expense of fruits, vegetables, and lean meats. As a result, they gain many extra pounds and run the risk of health problems created by overweight. (See Chapter 7.)

At the other extreme are people who try to lose weight with "crash" diets. Some of these call for the overuse of certain nutrients. High-protein and high-fat diets can lead to health problems, as discussed in Chapters 5 and 7. Overdoses of vitamin and mineral pills can cause serious illness, as mentioned earlier in this chapter.

Malnutrition is no longer a health problem stemming only from food shortages. It is also caused by poor food choices, as shown by recent surveys.

Nutrition Surveys

A *nutrition survey* collects information about the eating habits of a specific group of people. It can help to show



Malnutrition can be caused by not having enough food to eat or by choosing the wrong foods. A lack of food results in starvation. Wrong food choices can cause overweight.

whether people have good or poor nutrition.

Surveys are a complicated process, conducted by trained researchers. It can take years to complete and analyze the data.

First, a certain number of people must be selected to take part in the survey. They can represent a small area of the country or they can be selected nationwide. They can be chosen to represent specific groups, such as those from certain income brackets.

People who agree to take part in a survey keep a record of all the food they eat for a certain number of days. They are also given medical and dental examinations. Their blood and urine are tested to determine the levels of nutrients present. When all the information is collected, it is interpreted by health and nutrition experts.

One of the most important nationwide nutrition surveys in the United States was conducted by the U.S. Department of Agriculture. It was significant because it showed that poor nutrition is not limited to people in low-income brackets. Most health experts had assumed that people in higher income brackets would have few if any nutrition problems because they could buy whatever food they wanted. This survey pointed out that poor nutrition can be caused not only by lack of food and money but also by poor food choices.

Other surveys proved that people in some areas of the United States have serious health problems caused by malnutrition. As a result, nutrition experts began to look for ways to help consumers improve their nutrition.

Special Food Assistance Programs

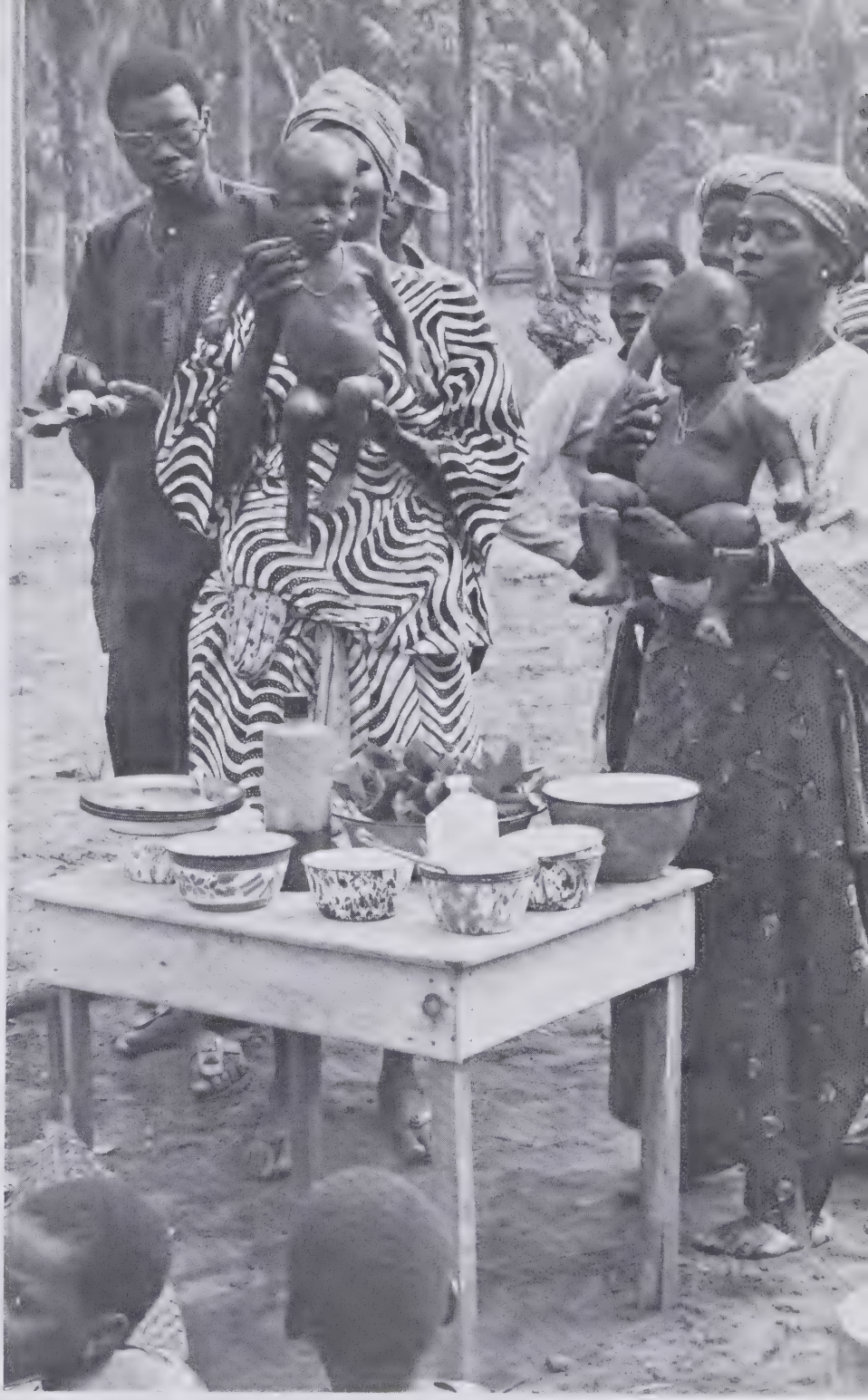
Many people do not have enough money to buy even the most economical foods needed for a nutritious diet. To help them, special food assistance programs are available, sponsored by federal, state, and local governments.

FOOD STAMPS

People on limited incomes can buy food stamps for a fraction of their worth. In turn, the stamps can be used for full value in purchasing food. These stamps cannot be used for non-food items such as cigarettes, soap, or alcoholic beverages.

ELDERLY ASSISTANCE PROGRAMS

The National Nutrition Program for the Elderly provides for nutrition assistance for the elderly in the community. Many areas have meal delivery systems, sometimes known as Meals on Wheels, for the elderly who live alone. Meals are prepared in a central kitchen and delivered by truck to their homes.



FAO

How important is a well-balanced diet? This picture tells the story. Home economists in Dahomey, Africa, showed residents how to use locally grown foods properly. Note the difference in the size of the two infants. The one on the right was fed the recommended diet while the one on the left was not.

Some communities offer special food programs in schools and community buildings. Here the elderly can buy low-cost, nutritious dinners and enjoy the company of others as they eat.

Elderly people are often able to cook for themselves but cannot get out to shop. They may be handicapped by disabilities, or transportation may not be available. Volunteer agencies often provide shopping help, either in the form of transportation or by actually doing the shopping.

CHILD NUTRITION PROGRAMS

The *National School Lunch Program* assists schools in providing nutritious lunches at a relatively low cost. Schools taking part in the program must serve the Type A lunch. This supplies approximately one-third of the daily dietary allowances recommended for the children served. Federal help in the program comes in the form of cash reimbursements, food, and also nonfood assistance.

The *School Breakfast Program* helps schools to provide nutritious breakfasts to needy students. Schools with many students who must travel long distances in the morning are also eligible for the program. According to standards set by the government, each meal must include milk, fruit or full-strength fruit juice or vegetable juice, and enriched bread or cereal. Schools are encouraged to serve a meat as often as possible. Students can buy the breakfast at a reasonable price.

The *Special Milk Program* encourages the use of fluid whole milk by children. All public and private nonprofit schools, child care centers, and camps are reimbursed for part of the milk served to children at a reduced cost. Schools may also serve free milk to needy children.

The *Special Food Service Program for Children* assists child care institutions in providing nutritious meals for children. These include public and nonprofit institutions such as day-care centers, settlement houses, and recreation centers. Also included are summer day camps and recreation programs that provide day care for children in low-income areas or from areas with many working mothers. Organizations offering summertime activities for school-age children in parks, playgrounds, and recreation centers may also participate.

WIC PROGRAM

A special food and nutrition program for women, infants, and children (WIC) provides supplemental food. Its purpose is to supply certain nutritious foods to family members with special nutritional needs—babies, children under four years old, pregnant women, or nursing mothers. Foods included in the program are iron-fortified infant formula, baby cereal and juices or approved substitute foods with the same nutritional values. Milk, juice, eggs, and iron-fortified cereals are also among the foods available. The program is carried out through local health clinics.

WHAT IS NUTRITION LABELING?

Nutrition labeling gives consumers helpful information about the nutrients in a food product. Although the program is approved by the federal government, it is completely voluntary, with two exceptions. Official nutrition labels must be used by food processors on packages when:

- Foods have been restored or enriched.
- A special nutrition claim is made for the food. Example: one glass of orange drink provides 50 percent of the day's vitamin C requirement.

A sample nutrition label appears in Appendix E. Note the order in which the nutrients are listed. The law specifies that nutrients must always be listed in the order shown so you can compare products more easily. Some labels may also give information on the amount of salt, cholesterol, and fatty acids.

Nutrition labels can help you in several ways:



Durkee Famous Foods
Nutrition labeling can help you plan flavorful, nutritious meals such as this—antipasto, cranberry-apple juice, veal parmesan, green beans, and spaghetti.

- You can become more aware of some of the nutrients needed for good health.
- You can become more familiar with the foods that supply important nutrients.
- By comparing the nutrition labels and prices on different brands, you can select food to give you the most nutrition for your money.
- You can plan nutritious daily menus more easily.

As you can see from the sample in Appendix E, nutrition labels have a limited amount of space for listing nutrients. To give consumers as much information as possible, the RDA (Appendix B) was condensed into three categories:

- Infants and children under four years of age.
- Children over four years of age and adults.
- Pregnant and lactating women. (*Lactating* means breast-feeding an infant.)

This condensed version is known as U.S. RDA (see Appendix C). Unless the food is for a special group, such as infants, the label will give nutrition information for only one category—children over four and adults.

Examine the sample nutrition label in Appendix E. Proteins, carbohydrates, and fats are given in grams. Vitamins and minerals are given as percentages of U.S. RDA. Note, however, that protein is also given as a percentage. Why? The percentage tells you if the food is a high-quality protein. (See pages 82–86). For instance, a food that gives you 10 percent is not as high quality as one that gives you 15 or 20 percent. The percentage can help you answer these questions:

- Is the food a good source of essential amino acids?
- Is the food a good protein buy for my money, or would another food be better?
- What percentage of my day's supply of amino acids does this food give me?

Chapter 6 tells more about using the nutrition label information when you plan meals.

KNOW YOUR NUTRIENTS

The chart on pages 72–75, "Know Your Nutrients," gives a capsule review of the most important nutrients. It tells which foods are good sources of each nutrient, what the nutrient does in the body, and what happens if you eat too little or too much. The U.S. RDA for each nutrient is also given.

Chapter 5 gives more details on what the nutrients can do for your health.

Let's Explore and Report

- Obtain information about recent nutrition surveys.
- What special food programs does your school and/or community offer?
- Interview a director of a community food program. What are the goals of the program? The major problems?
- When you shop in grocery stores, look for nutrition labels on food packages. Why are these foods labeled with nutrition information?
- Plan a bulletin board showing the advantages of nutrition labeling.

What Would YOU Do?

- You and your friend have just finished eating a well-balanced lunch at school. Your friend immediately takes several vitamin and mineral pills. He explains that, besides eating nutritious meals, he always takes extra amounts of vitamin and mineral supplements, "just to be safe."

KNOW YOUR NUTRIENTS

Nutrients	Best Foods	What Nutrients Do	Signs of Poor Health Caused by Too Little or Too Much
U.S. RDA for Children over 4 Years Old and Adults			
Carbohydrates *Carbohydrates should supply 50 percent of the day's food.*	*Starches:* Breads, cereals, macaroni products, corn, potatoes, dried beans and peas. *Sugars:* Honey, molasses, sugar, other sweets. *Fiber:* Whole-grain breads and cereals, fresh fruits and vegetables.	• Supply energy. Most economical source of energy you can buy. • Help your body use fats efficiently. • Fiber essential for digestion.	**Too Little** • Poor vitality. • Fatigue. • Constipation. **Too Much** • Overweight problems and related diseases. • Some, especially sweets, cause tooth decay if teeth are not brushed right after eating.
Fats *Fats should supply about 35 percent of the day's food.*	*Saturated Fats* All animal foods. Chocolate. *Unsaturated Fats* Fish. Vegetable oils. Nuts.	• Supply energy, twice as much ounce for ounce as carbohydrates and proteins. • Some supply essential fatty acids for normal growth and skin health. • Carry fat-soluble vitamins A, D, E, K.	**Too Little** • Dermatitis or skin inflammation, caused by lack of essential fatty acids. **Too Much** • Overweight problems and related diseases.

KNOW YOUR NUTRIENTS (Continued)

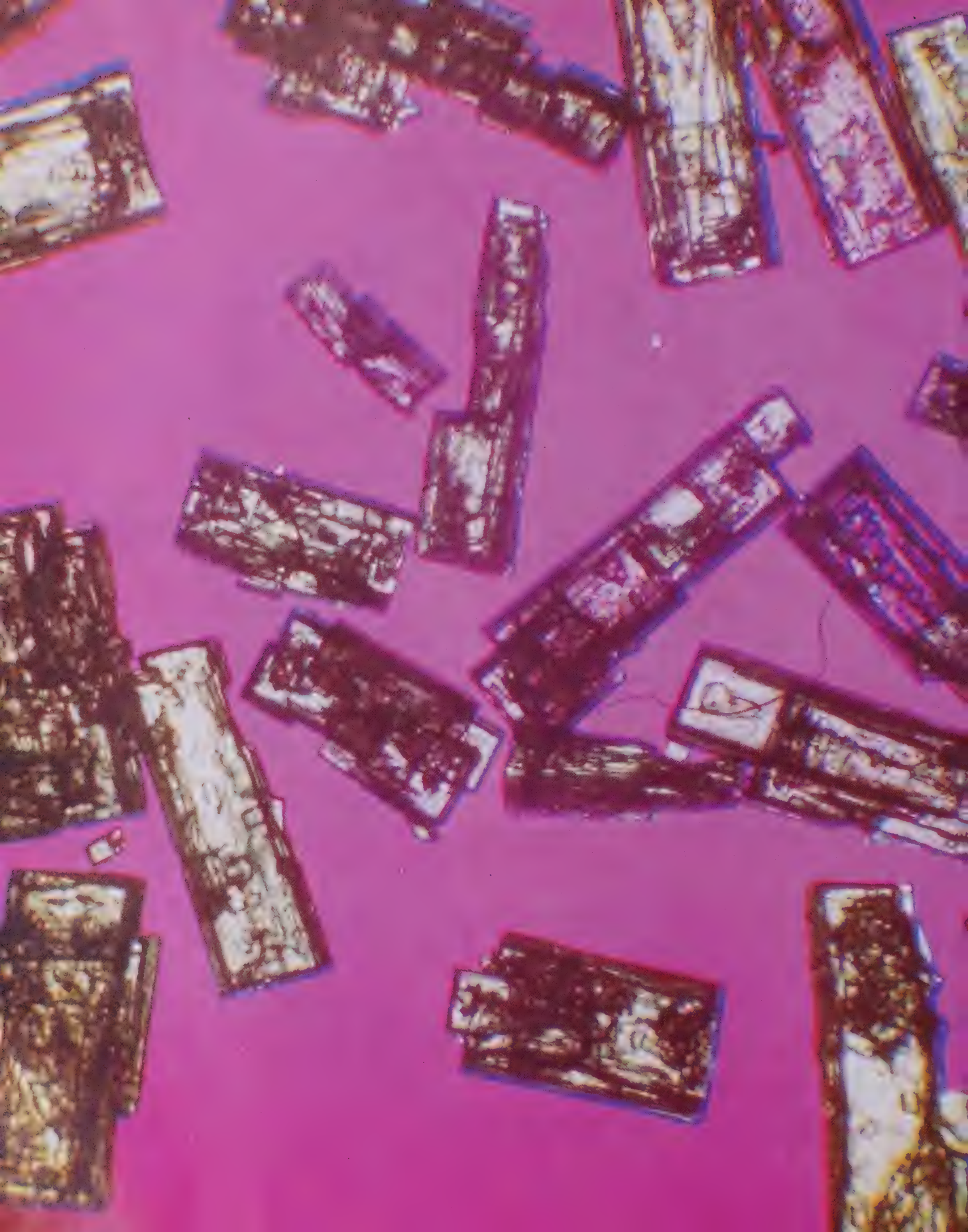
Nutrients	Best Foods	What Nutrients Do	Signs of Poor Health Caused by Too Little or Too Much
Proteins *U.S. RDA* *High-quality protein* *45 g* *Low-quality protein* *65 g*	*High-quality Proteins* Meat. Fish. Poultry. Eggs. Milk and dairy products. Peanuts and peanut butter. Legumes. *Low-quality Proteins* Cereals. Grains. Vegetables.	• Provide essential amino acids—the "building blocks" for building and repairing all cells in body. • Help build enzymes, hormones, and body fluids. • Help make antibodies to fight disease. • Supply energy.	**Too Little** • Poor muscle tone. • More apt to get infections and diseases. • Slow recovery from illness, injuries, or surgery. • Extreme deficiency in children: stunted growth, low resistance to disease, mental retardation. **Too Much** • Waste of money since excess stored as fat and can never be used for building and repairing cells.
VITAMINS			
Vitamin A (Retinol) (Fat soluble) *U.S. RDA* *5,000 IU*	• Liver. • Deep yellow fruits and vegetables: carrots, pumpkin, sweet potatoes, winter squash, apricots, peaches, cantaloupe, papayas. • Dark green vegetables: turnip tops and other leafy greens, broccoli. • Milk and milk products. • Butter and fortified margarine. • Egg yolk.	• Helps eyes adjust to dim light. • Keeps skin healthy. • Helps promote growth. • Helps you resist infection by keeping mucous membranes healthy in mouth, nose, throat, and digestive tract.	**Too Little** • Eyes become sensitive to light. • Night blindness. • Get infections easily. **Too Much** (usually as vitamin supplements) • Headache. • Nausea. • Irritability. • Skin may turn yellow. • Extreme overuse by children causes stunted growth.
Vitamin D (Calciferol) (Fat soluble) *U.S. RDA* *400 IU*	• Fish liver oils. • Fortified milk. • Body produces vitamin D from cholesterol in skin when exposed to sunlight.	• Helps build strong bones and teeth in children. • Helps maintain bones in adults.	**Too Little** • Rickets in children: bow legs, knock-knees, curvature of spine. Bone damage in children may be permanent. • Adult bones soften. **Too Much** (usually as vitamin supplements) • Loss of weight. • Nausea. • Diarrhea. • Bone deformities. • Lung and kidney damage.

KNOW YOUR NUTRIENTS (Continued)

Nutrients	Best Foods	What Nutrients Do	Signs of Poor Health Caused by Too Little or Too Much
VITAMINS (Continued)			
Thiamin (Vitamin B_1) (Water soluble) *U.S. RDA* *1.5 mg*	• Lean pork. • Organ meats—kidney, liver, heart. • Dried beans and peas. • Whole-grain and enriched breads and cereals.	• Helps body produce energy. • Helps you to have a good appetite and good digestion. • Keeps your nervous system healthy.	**Too Little** • Poor appetite. • Nausea. • Nervousness. • Loss of energy. • Digestion problems. • *Beriberi:* weakened nerve tissues and muscles; heart disease; paralysis. **Too Much** (usually as vitamin supplements) • Waste of money. Body gets rid of excess.
Riboflavin (Vitamin B_2) (Water soluble) *U.S. RDA* *1.7 mg*	• Milk. • Liver, kidney, heart. • Lean meat. • Fish. • Poultry. • Eggs. • Dark green leafy vegetables.	• Helps produce energy. • Keeps eyes healthy. • Keeps skin around mouth and nose smooth.	**Too Little** • Sores and cracks around mouth, lips, tongue, nose, and eyelids. • Dim vision. **Too Much** (usually as vitamin supplements) • Waste of money. Body gets rid of excess.
Niacin (Water soluble) *U.S. RDA* *20 mg*	• Liver. • Lean meat, poultry, fish. • Peanuts and peanut butter. • Dried beans and peas. • Whole-grain and enriched breads and cereals. • Milk.	• Helps produce energy. • Keeps nervous system healthy. • Aids in digestion.	**Too Little** • Nervousness. • Digestion problems. • *Pellagra:* rough, irritated skin; digestive disturbances; mental disorders; death. **Too Much** (usually as vitamin supplements) • Waste of money. Body gets rid of excess. Large doses may cause flushing of the skin.
Vitamin C (Ascorbic Acid) (Water soluble) *U.S. RDA* *60 mg*	• Citrus fruits—oranges, grapefruit, tangerines. • Other fruits—strawberries, cantaloupe, papayas. • Vegetables—tomatoes, broccoli, raw cabbage, collards, mustard and turnip greens, white potatoes cooked in skins.	• Helps build and maintain healthy gums and teeth. • Helps in healing wounds. • Keeps blood vessels healthy. • Helps to make the material that holds body cells together. • Helps body fight off infection.	**Too Little** • Bleeding gums. • Bruises. • *Scurvy:* weakness; poor appetite; brown, thick, scaly skin; bruises; painful, swollen joints. **Too Much** (usually as vitamin supplements) • Waste of money. Body gets rid of excess. Large doses may cause diarrhea.

KNOW YOUR NUTRIENTS (Continued)

Nutrients	Best Foods	What Nutrients Do	Signs of Poor Health Caused by Too Little or Too Much
		MINERALS	
Calcium *U.S. RDA* *1200 mg*	• Milk. • Dairy products—cheese, ice cream. • Green leafy vegetables—collards, dandelion greens, kale, mustard and turnip tops. • Canned sardines and other processed fish eaten with bones.	• Helps build and maintain healthy bones and teeth. • Helps blood clot during bleeding. • Helps heart, nerves, and muscles work properly.	**Too Little** • Weak bones and teeth. • *Osteoporosis* in adults: bones become fragile and break easily. **Too Much** • Wasted money. No evidence of beneficial effects. • Can cause calcium deposits in soft tissues.
Iron *U.S. RDA* *18 mg*	• Liver, kidney, heart. • Meat. • Egg yolk. • Dried beans and peas. • Dark green leafy vegetables. • Dried fruit. • Whole-grain and enriched breads and cereals. • Molasses.	• Helps make hemoglobin. • Helps cells use oxygen.	**Too Little** • *Anemia:* Poor appetite, pale skin, tired feeling, weakness. **Too Much** • Toxic.
Iodine *U.S. RDA* *150 micrograms*	• Iodized table salt. • Salt-water fish and shellfish.	• Helps thyroid gland work properly.	**Too Little** • *Goiter:* swelling in neck caused by enlarged thyroid gland. **Too Much** • Wasted money.



Chapter 5

More About the Nutrients

To help you to. . .

- **Know what each nutrient does for your body.**
- **Identify the best food sources of each nutrient.**
- **Understand what happens when you eat too little or too much of a nutrient.**

Why should you study the nutrients? By understanding some of the basic facts, you can become a more knowledgeable consumer. Knowing the nutrients can help you to:

- Select the most nutritious foods for your daily meals and snacks.
- Be more alert to nutrition claims made by advertisers for their food products.
- Understand discussions in newspapers and magazines about current findings in the field of nutrition.
- Inform friends and relatives about the facts relating to good nutrition.

Vitamin Information Bureau

Microscopic view of pyridoxine (vitamin B_6) crystals.

CARBOHYDRATES

Look for these terms

double sugars
fiber
fructose
glucose
glycogen
lactose
maltose
plaque
simple sugars
starch
sucrose
tooth decay

Carbohydrates are found mainly in plant foods such as fruits, vegetables, and grains.

How Carbohydrates Help You

Carbohydrates supply energy. They are the main source of energy for the body. Compared to other foods, they are relatively inexpensive. This makes them the most economical source of energy you can buy.

They help your body make the best use of proteins. If you do not eat enough fats or carbohydrates, your body will use proteins for energy. By using carbohydrates as your main source of energy, you save proteins for their most important job—maintaining and building body cells.

Carbohydrates help the body use fats efficiently. Here is another example of nutrient teamwork. Without carbohydrates, the body cannot use fats for energy efficiently. This is discussed in detail under "Fats" on page 80.

They help digestion. The fiber in cereals, vegetables, and fruits is not digestible. Therefore it causes food to move through the intestinal tract more easily.

If you eat more carbohydrates than you need for energy, the extra is changed to fat. It is stored in your body as a future supply of energy.



Durkee Famous Foods

Fruits, vegetables, and grains are the main sources of carbohydrates.

What Are Carbohydrates?

Carbohydrates include sugars, starches, and fiber.

SUGARS

Sugar has little nutritive value but it is a good source of energy. People are more familiar with sugar in its most common form—table sugar. However, two types of sugars are common in food. According to their chemical formula, they are classified as simple sugars (*monosaccharides*) and double sugars (*disaccharides*).

Simple Sugars (Monosaccharides)

The most common simple sugars in food are fructose and glucose. *Fructose,* also known as fruit sugar, is the sweetest of all the sugars. It occurs in honey, ripe fruits, and many vegetables.

Glucose is sometimes called dextrose. It is found in sweet fruits and in some vegetables. During digestion, all carbohydrates are broken down into simple sugars. Glucose is the main form of simple sugar used by the body. Circulating in the blood stream, it gives the body a constant supply of fuel for producing energy.

Double Sugars (Disaccharides)

Double sugars are more common in foods than are simple sugars. They include sucrose, lactose, and maltose.

Sucrose, also known as table sugar, is found in sugar cane, sugar beets, sorghum cane, the sap of maple trees, and in fruits and vegetables.

Lactose or milk sugar is found only in milk. It is not as sweet as the other sugars.

Maltose or malt sugar occurs in cereals.

STARCHES

Most plants store their food supply in the form of *starch* in their roots, tubers (underground stems), and seeds. Foods such as green bananas, corn, cereal grains, and potatoes have relatively large amounts of starch.

FIBER

Fiber, also called bulk, cellulose, or roughage, is necessary for the digestion process. Whole-grain breads and cereals, raw vegetables, and the skins of raw fruit are excellent sources of fiber.

Good Sources

The amount of carbohydrates in fruits and vegetables varies, depending on the part of the plant. Leaves and stalks, such as turnip tops, cabbage, and celery, have relatively low amounts of carbohydrates. So do flowers and buds, such as cauliflower and broccoli. Roots, tubers, and seeds, such as potatoes and grains, are high in carbohydrates.

Food experts recommend that carbohydrates supply about 50 percent of a person's daily food choices.

If You Eat Too Little

When people eat a balanced diet including a variety of foods, there is little chance they will have a deficiency of carbohydrates. However, people sometimes go on weight-reducing diets extremely low in carbohydrates. As a result, they cannot use fats efficiently for energy. They usually feel tired all the time and have no energy or vitality. Because their diets lack fiber, they may suffer from constipation.

If You Eat Too Much

If you eat more carbohydrates than you need, they are changed to fat and stored in your body. Over a period of time, you can gain many extra pounds. This can lead to health problems related to overweight, such as heart disease, high blood pressure, and diabetes.

TOOTH DECAY

Research shows that eating some starches and sugars causes *tooth decay.* Sucrose, or ordinary table sugar, does the most damage. Bacteria are normally present in the mouth. As soon as they come in contact with sugar, they produce a gummy material. It helps the bacteria stick to your teeth and develop into a thriving colony known as *plaque.* These bacteria act on the sugar, causing it to ferment and produce an acid. The acid attacks tooth enamel, tooth and gum tissue, and eventually the bone structure. You can develop cavities and even lose your teeth.

Sticky carbohydrates, such as candy and chewy cookies, cling to teeth the longest and do the most harm. People who often snack on sweets invite severe dental problems.

Starches can also cause tooth decay because they accumulate in crevices in your back teeth. Since they are turned into sugar by enzymes in the mouth, bacteria can cause them to ferment and create cavities.

How do you cope with a sweet tooth? Researchers have discovered that the number of times you eat sweets during the day is more important than the amount you eat. If you must have sweets, limit them to just once a day. A rich dessert after a well-balanced meal can satisfy your longing for sweets and still cut down on your chances of developing tooth decay.

To prevent dental cavities or caries, remove food deposits from your teeth by using a toothbrush and dental floss regularly. As a rule, brush your teeth when you get up, after each meal, and before going to bed. It is especially important to brush your teeth right after eating sweets to keep the bacteria from growing. If you cannot brush your teeth right after eating, rinse your mouth vigorously with water to remove as many of the food particles as you can.

Remember, for good dental health:

- Avoid eating sweets, or at least limit them to once a day.
- Brush your teeth immediately after eating.

- Use dental floss every day.
- See your dentist regularly.

Let's Explore and Report

- Form a committee to get the latest findings on the importance of fiber in the diet.
- Clip pictures of carbohydrate foods from magazines and newspapers. Label them as poor or good sources.
- Obtain menus from three different restaurants such as a drive-in, a coffee shop or regular restaurant, and an ethnic restaurant. Which food selections are high in starch? Sugar? *Save your menus for later use in this course.*

FATS

Look for these terms

cholesterol
essential fatty acids
hydrogenation
invisible fats
ketones
polyunsaturated
saturated
subcutaneous fat
unsaturated
visible fats

Fats can be either visible or invisible. *Visible fats* are those that can be seen, such as butter, margarine, salad and cooking oils, and fat layers in meat. *Invisible fats* are a natural part of a food, but cannot be seen. They are found in foods such as egg yolks, meat, fish, poultry, baked products, avocados, and nonmilk products such as coffee whiteners and whipped dessert toppings.

How Fats Help You

Fats supply energy. Pound for pound, they supply twice as much energy as carbohydrates and proteins. Excess calories, whether from fat, carbohydrates, or proteins, are stored in the body as fat for use as a future source of energy.

Fats supply essential fatty acids. These are needed for normal growth and reproduction and for skin health.

Fats team up with carbohydrates. Without carbohydrates, your body cannot use fats properly. When this happens, substances called *ketones* are formed. If a person eats large quantities of fats without enough carbohydrates, so many ketones form that the body cannot get rid of them fast enough. A condition known as ketosis or acidosis results, which can endanger health.

Fats carry fat-soluble vitamins. Vitamins A, D, E, and K are fat soluble—they dissolve in fats. Thus fats provide these vitamins in a balanced diet.

Fats insulate the body. The deposits of fat under the skin are known as *subcutaneous fat.* They serve as insulating material, much the same as the insulation used in homes. They protect the body against the shock of temperature changes in the environment. For instance, if the temperature in the room drops suddenly, the fat layer can help your body to adjust and stay comfortable. Subcutaneous fat also helps to give the body shape, especially in women.

Fats protect vital organs. Body fat deposited around vital organs such as heart and kidneys helps to hold them in place. It also protects them from physical shock and injury.

Fats give food staying power. This results in satiety, which was discussed in Chapter 3. In other words, fats stay in the stomach longer than carbohydrates or proteins. Therefore they delay the feeling of hunger.

They give flavor. Butter, margarine, bacon, and salt pork are frequently added to foods to improve the flavor. Cream is served with desserts, and oils are used in salad dressings. Foods become crisp and flavorful when fried in hot fat.

What Are Fats?

Fats contain fatty acids, which are identified as either saturated or unsaturated.

Fatty acids are made up of the chemicals carbon, oxygen, and hydrogen. The amount of hydrogen determines whether or not the fatty acid is saturated. If a fatty acid has as much hydrogen as it can hold, it is *saturated.* If it has less hydrogen than it can hold, it is *unsaturated. Polyunsaturated* fats have the least amount of hydrogen.

Depending on the types of fatty acids they contain, fats are



National Marine Fisheries Service
Fish contains polyunsaturated fats.

identified as saturated or unsaturated.

Most animal fats are high in saturated fats. Fish is an exception. It contains polyunsaturated fatty acids. Generally, the saturated fats are solid at room temperature.

Most vegetable oils are high in unsaturated fats. These include peanut, soybean, corn, safflower, and cottonseed oils. Most unsaturated fats are liquid at room temperature. Coconut oil is an exception. It is a saturated fat but is also a liquid because of its chemical composition.

Vegetable oils can be made to remain solid at room temperature through a process known as *hydrogenation*. By this process, hydrogen is added to an unsaturated fat to change the degree of saturation. Vegetable shortening and margarine are two examples of products made from hydrogenated vegetable oils.

Fatty acids can be made by the body from the chemicals in fats. However, some cannot be made by the body and must come from food. These are known as *essential fatty acids*. Linoleic acid is the most important essential fatty acid.

People in the United States have increased the amount of fat they eat every year. There has been a marked change, however, in the type of fat eaten. Consumers today use fewer animal fats and more vegetable fats and oils. For instance, margarine and non-dairy coffee whiteners and whipped toppings are more popular than dairy products such as butter and cream. Vegetable shortenings have replaced lard for cooking and baking.

Cholesterol

Cholesterol is a fat-like substance found in every cell in the human body. It is a normal part of blood, tissues, and digestive juices. Cholesterol in the skin is turned into vitamin D when it is exposed to sunlight. Even if people stop eating cholesterol, the body can make all it needs.

Cholesterol occurs only in foods of animal origin.

In atherosclerosis, a heart disease, fats form on the inside of some of the blood vessels. This causes the vessels to become narrower. Cholesterol was found to be a part of the fats in the blood vessels. However, there is debate among researchers about the relationship between high amounts of cholesterol in the blood, a high-fat diet, and coronary disease.

Unless a physician recommends lowering the amount of

saturated fat in the diet, there is no reason to stop eating these foods. Most health experts feel, however, that the average diet is too high in fat. They recommend that people use moderation in their food selection. Although no RDA has been established for fats, the Food and Nutrition Board recommends that about 35 percent of the calories of the average diet should come from fat.

Good Sources

Some animal foods such as meat and dairy products have high amounts of fat. About half of the calories in beef, for instance, come from fat. Others, such as poultry and some fish, have relatively low amounts. Fruits and vegetables are generally low in fat.

Vegetable oils, such as corn, soybean, and safflower oils, are the best sources of linoleic acid.

If You Eat Too Little

No fat deficiencies have been found in average diets in the United States. However, people on reducing diets sometimes stop eating fats, which may create a deficiency of linoleic acid. This can cause dermatitis, an inflammation of the skin.

If You Eat Too Much

If you eat more fats than your body can use, they are stored as body fat. Eventually, you can gain many extra pounds, which can create health problems.

If you eat large quantities of fats with few or no carbohydrates, you can develop ketosis. (See page 80.)

Let's Explore and Report

- Research the latest information on the relationship between fats and heart disease.
- Refer to the menus you collected earlier. Which foods are high in fat? Low in fat? Save your menus.
- Conduct a survey among your acquaintances to determine their understanding of cholesterol.

PROTEINS

Look for these terms

analog
essential amino acids
high-quality proteins
kwashiorkor
low-quality proteins
textured vegetable protein
tryptophan

Proteins make up about 75 percent of all the solid matter in the body. They are part of every human cell.

Body proteins are not the same as those found in food. However, protein foods contain amino acids, which the body rebuilds into the kinds of proteins it needs.

How Proteins Help You

Proteins supply amino acids—the "building blocks" your body uses to build and maintain cells. Proteins in the healthy body are constantly being broken down and replaced. In children and young adults, new cells are needed for growth. People who are ill or have been injured need new cells to replace the damaged ones. Thus the need for body protein is continuous. Your body uses amino acids to build whatever kinds of proteins it needs. Over 100,000 kinds of body proteins are made to replace wornout cells, build new ones, and heal injured ones. This process is discussed on pages 51–53.

Proteins help build enzymes, hormones, and body fluids. A cell contains hundreds of enzymes. Without enzymes, chemical activity in your body would stop. Scientists estimate that the body has 20,000–30,000 enzymes, each responsible for a specific chemical reaction.

Proteins team up with iron to make hemoglobin, an important part of every red blood cell. Hemoglobin carries oxygen to the cells. (See page 49.)

They help fight disease. Proteins are important in making antibodies, which help your body fight disease.

They help regulate some of the body processes. Proteins help maintain your body's water balance. They also help keep your blood neutral so it does not become too acid or too alkaline.

They help make the vitamin niacin. Your body uses one of

the essential amino acids, *tryptophan,* to manufacture the vitamin niacin.

They supply energy. When you do not eat enough carbohydrates and fats for energy, your body uses proteins. Since protein foods cost more than carbohydrates and fats, they are a very expensive source of energy.

What Are Amino Acids?

Over 20 amino acids have been identified in protein foods. Most of these can be made by the body. Eight amino acids cannot be made by the body in sufficient amounts. These are called *essential amino acids* because they must be supplied by food.

The amount and kinds of essential amino acids in a food determine whether it is a good source of protein. Foods with adequate amounts of the essential amino acids are *high-quality proteins.* They are also known as complete proteins. Animal foods such as eggs, fish, poultry, meat, and dairy products contain all of the essential amino acids. Therefore they are high-quality proteins.

Plant proteins, such as cereals and vegetables, vary in quality. Some have larger amounts of essential amino acids than others. Proteins from legumes, especially soybeans and chickpeas or garbanzos, and peanuts, are almost as complete as animal proteins. Therefore these plant foods are considered high-quality protein. Plant foods with smaller amounts of essential amino acids are called *low-quality* or incomplete *proteins.*

You can increase the protein quality of plant foods if you eat them with animal proteins. The combination makes all of the essential amino acids available to your body. Although the proteins do not have to be mixed together, they must be eaten in the same meal. This allows all of the amino acids to work together as a team. A balanced diet should use protein from both plants and animals, but at least a third should come from animal sources.

Combinations of plant and animal proteins have been long-standing favorites. Some include macaroni and cheese, rice and fish, vegetable stew with meat, pork and beans, and meat and bread sandwich.

Amino acids cannot be stored by the body. Under normal conditions, the amounts of amino acids circulating in the blood stream begin to fall in about four hours. This means you need a supply of essential amino acids not just daily but regularly throughout the day.

For this reason, protein foods should be included in every meal, but especially at breakfast. When you wake up, you probably have had no food for at least ten hours. Your body needs a supply of essential amino acids to continue repairing and building cells. Any proteins can be eaten—not just the traditional breakfast foods such as eggs, bacon, or cereal and milk. If you wish, you can eat a grilled cheese sandwich, leftover chili, or beans with ham.

Good Sources

Eggs, fish, poultry, lean meats, milk, cheese, legumes, and peanut butter are good sources of high-quality proteins.

Many cereals, grains, and vegetables are sources of lower-quality proteins. When eaten with animal proteins, they can provide all of the essential amino acids.

TEXTURED VEGETABLE PROTEIN

Textured vegetable protein refers to ingredients or finished foods made from soybeans. Other plant sources, such as wheat, oats, and cottonseed may be used. If the soy is mixed with protein from other sources, such as wheat, corn, milk, or egg white, it can supply all of the essential amino acids.

Textured vegetable protein is generally used as an analog or a meat extender. It can be processed so it has the same texture, flavor, and appearance as meat, such as breakfast sausage or crumbled cooked bacon. Such foods are called *analogs.* As a meat extender, textured vegetable protein is most commonly added to hamburger.



If You Eat Too Little

Usually, people who eat both animal and vegetable protein regularly get all the essential amino acids they need.

The United States has an abundant supply of high-quality animal protein. However, many people in underdeveloped countries suffer from serious protein shortages. In some areas, there is hardly enough food to keep people alive. In others, only low-quality vegetable protein is available, and few

Rice Council
Michigan Bean Commission
Combinations of plant and animal proteins are common favorites, such as rice with cheese and meat with beans.



people can afford imported animal protein.

Even if a good supply of protein is available, some people still do not eat enough. During certain periods in life, the protein need is higher than at other times, but people often are not aware of this. Pregnant women and nursing mothers need extra protein to build new cells. Infants, children, and adolescents need more protein to help them grow.

Poor food habits can also cause protein deficiency. Many people, especially those who live alone, eat limited types of foods. Instead of having regular meals, they develop the habit of snacking throughout the day, often only on carbohydrates. As a result, they not only have poor nutrition, but gain weight as well.

Vegetarians who eat only plant foods can develop serious protein shortages. They must select the plant foods carefully so they get all of the essential amino acids at every meal. For this reason, nuts and whole-grain cereals are an important part of vegetarian diets. (See pages 146 and 147.)

People who do not get enough protein lack energy and are more susceptible to infections and disease. They take longer than normal to recover from illness and wounds.

Infants and children who have had a severe shortage of protein over a period of time can develop a serious illness known as *kwashiorkor*. It causes stunted growth, low resistance to disease, and mental retardation. If not properly treated, it usually results in death.

If You Eat Too Much

Most Americans enjoy the flavor of protein foods, so they sometimes eat far more than their bodies need. Overeating protein can be a waste of money. When the body has all the amino acids it needs, extra protein is turned into fat. It is



FAO

Protein foods help fight malnutrition in Indonesia. These foods include bean sprouts, meat, rice, and soymilk.



Blue Goose



Color is a good clue to nutrition. Deep-colored yellow, orange, and green foods such as carrots and broccoli are good sources of vitamin A.

stored as a future supply of fuel for energy. This means it can never be turned back into amino acids and used for cell building.

High-protein diets, which usually restrict the use of carbohydrates, can result in ketosis. (See page 80.)

Let's Explore and Report

- Collect pictures from newspapers and magazines of animal and plant proteins. Make up a poster showing combinations of animal and plant proteins which would give all of the essential amino acids.
- Using the three menus collected earlier, select meals made up of animal and plant proteins. Save the menus.
- Keep a record of the food you eat for a typical day. Using the table *Nutrients in Food,* Appendix G, determine how much protein you ate. Is the total percentage more or less than recommended by U.S. RDA? Save your record for later use.

VITAMINS

Look for these terms

antioxidant
beriberi
collagen
fat soluble
germ
pellagra
prothrombin
provitamin
rickets
scurvy
vitamins
water soluble

Vitamins are necessary for life. They help your body carry out its many complex processes. In themselves, they do not supply energy or become any part of your body structure.

If you eat a variety of foods every day, you will usually have all the vitamins you need. Only when people eat a limited diet is there danger of a serious vitamin shortage.

Vitamins are either water-soluble or fat-soluble. *Water-soluble vitamins* (B complex and C) can mix only with water. *Fat-soluble vitamins* (A, D, E, K) can mix only with fat. This is important because it determines how your body stores excess amounts.

Water-soluble vitamins are usually not stored by the body. Excess amounts are removed with waste products. Research is showing some evidence, however, that overdoses of some water-soluble vitamins can have adverse effects on the body, as will be discussed later.

Fat-soluble vitamins are stored. The supply is built up as long as an excess amount is eaten. When large amounts accumulate, they can poison the body, as discussed in Chapter 4.

When vitamins were first discovered, they were called by the letters of the alphabet. However, research eventually proved that vitamins are chemicals. Thus some food experts prefer to use the chemical names rather than the letters.

Vitamin A (Retinol)

Vitamin A is a fat-soluble vi-

tamin. Your body stores it primarily in the liver.

HOW VITAMIN A HELPS YOU

Vitamin A helps you have good night vision. The ability of the eye to adapt to changes in light depends on the presence of a pigment in the retina of the eye. Vitamin A is part of this pigment.

It helps keep your skin healthy. Vitamin A helps maintain a clear, smooth skin.

Vitamin A helps your body resist infections. It keeps the linings of your mouth, nose, throat, and digestive tract healthy so they are less apt to become infected.

Vitamin A promotes good growth. It is especially needed for the growth and development of the skeleton as well as for strong, healthy teeth.

GOOD SOURCES

Vitamin A comes in two forms—as the vitamin itself and as the provitamin *carotene*. A *provitamin* is a substance that can be turned into a vitamin by the body. The body uses carotene to manufacture vitamin A.

Colors are a good clue to the presence of vitamin A in food. Carotene is yellow or orange-yellow, giving foods such as carrots and apricots this characteristic color. In vegetables, the yellow is camouflaged by chlorophyll and becomes a deep green. As a rule, the deeper the color, the more vitamin A the food contains.

When you buy skim milk, be sure vitamin A has been added to it. Read the label. In making skim milk, fat is removed from whole milk, and vitamin A goes with it. Thus the vitamin A must be replaced.

Good sources of vitamin A are liver; deep yellow fruits and vegetables such as carrots, pumpkin, papayas, and apricots; dark green vegetables such as turnip tops and broccoli; milk; butter; whole-milk cheese; egg yolk.

IF YOU EAT TOO LITTLE

In a vitamin A deficiency, the eyes become sensitive to light. The skin develops a rough texture, and the person becomes susceptible to infections and disease. In extreme deficiencies, night blindness occurs.

IF YOU EAT TOO MUCH

Since vitamin A is stored in the liver, people who take large doses run the risk of accumulating excess amounts in their bodies. An excessive amount can poison the body. Too much vitamin A causes headache, nausea, and irritability. It may turn the skin yellow. In extreme cases, reported in children, excess amounts can retard growth.

Vitamin D (Calciferol)

Vitamin D is a fat-soluble vitamin. Your body stores it mainly in the liver.

HOW VITAMIN D HELPS YOU

Vitamin D teams up with the minerals calcium and phosphorus. Together they build strong bones and teeth in children and maintain them throughout life. They are also part of the complex processes taking place in all body cells.

GOOD SOURCES

Direct sunlight on the body produces vitamin D from cholesterol in the skin. However, heavy clothes, air pollution, and not enough time spent in the sun regularly make this an unreliable source.

Except in fish liver oils, vitamin D is not commonly found in foods. Therefore the federal government directed that milk be fortified with vitamin D, since it is used by almost everyone. Milk is fortified during processing by dairies, who add a measured amount of vitamin D concentrate to a measured quantity of milk. A quart of milk contains 400 International Units (IU) of vitamin D.

IF YOU EAT TOO LITTLE

A long-term shortage of vitamin D in the diets of growing children can cause *rickets*. Because calcium and phosphorus cannot work without vitamin D,



Even in the best of weather, most large cities have a covering layer of smog, which limits the amount of sunlight filtering through. This means direct sunlight generally cannot be considered a dependable source of vitamin D.

bones become weak. Bowlegs, knock-knees, and curvature of the spine are common. While the disease can be cured by adding enough vitamin D to the diet, some of the bone damage may be permanent.

In adults, a shortage of vitamin D can cause the bones to become soft.

IF YOU EAT TOO MUCH

As with vitamin A, it is possible to get too much vitamin D. This is especially a problem with infants and children who are fed fortified foods and also given vitamin supplements.

Overuse can cause loss of weight, nausea, and diarrhea. In extreme cases, overuse causes bones to deform and damages lungs and kidneys.

Vitamin E (Tocopherols)

Much is still to be discovered about this vitamin. Vitamin E is fat soluble. Your body stores it mainly in muscle and fat tissues.

HOW VITAMIN E HELPS YOU

Vitamin E's main job is to act as an antioxidant. It prevents oxygen in the body from destroying other substances such as unsaturated fats as well as vitamin A.

It helps regulate some of the processes involved in cell production.

Commercially, vitamin E is used as an additive in processed foods to slow down spoilage.

Food quacks make many exaggerated claims for vitamin E. They glorify it as a "miracle" solution to many health problems: disease of heart and blood vessels, sterility, rheumatic fever, muscular dystrophy, and disorders of pregnancy. According to the American Medical Association, there is no scientific evidence to support these claims for humans at this time.

GOOD SOURCES

Good sources of vitamin E include vegetable oils, whole-grain breads and cereals, eggs, liver, meat, milk, green leafy vegetables.

IF YOU EAT TOO LITTLE

According to nutrition surveys in the United States, an average diet supplies adequate amounts of vitamin E.

IF YOU EAT TOO MUCH

Not enough research has been done to date on this vitamin to determine the effects of overuse. Since vitamin E is oil soluble and stored in the body, it is possible that toxic amounts can accumulate.

Vitamin K

Vitamin K is fat soluble. Its main job is to help the liver make *prothrombin,* a protein required by blood to form clots when there is a wound. If clots do not form, there is danger of excessive bleeding.

Shortages of vitamin K rarely occur in the average person, since it is plentiful in many

foods. In addition, the human intestinal tract has bacteria which make vitamin K.

GOOD SOURCES

Good sources of vitamin K include green leafy vegetables, egg yolks, milk, and organ meats such as liver and heart.

B-complex Vitamins

While the water-soluble vitamins make up a large group, all but one belong to the B-complex. The other one is vitamin C.

At one time, the B vitamins were thought to be one single vitamin. They are so much alike it took some time for scientists to identify them. For instance, they are soluble in water, which makes it difficult to separate them.

Because these vitamins are water soluble, they are not stored by the body. Excess amounts are removed with waste materials.

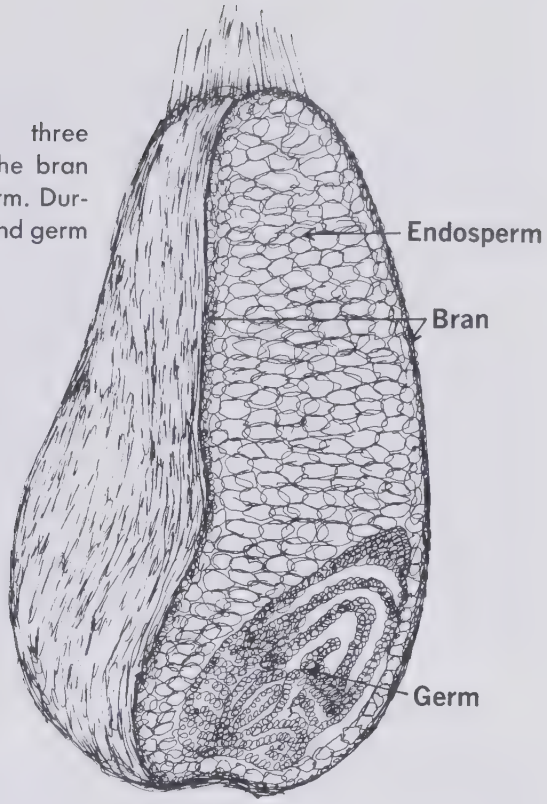
The B-complex vitamins are thiamin, riboflavin, niacin, folacin (folic acid), B_6, B_{12}, pantothenic acid, and biotin.

Thiamin (Vitamin B_1)

Since thiamin can be stored by the body for only a short time, a regular daily supply is needed.

HOW THIAMIN HELPS YOU

Thiamin's main job is to help the body use carbohydrates to produce energy. It is also involved in the use of glucose for making cells. Because of these roles, thiamin helps you to have a normal appetite and good digestion. It also keeps your nervous system healthy.



A grain consists of three parts—the endosperm, the bran or outer coat, and the germ. During processing, the bran and germ are removed.

GOOD SOURCES

Whole grains normally have good amounts of thiamin in their bran or outer coats and germs. (The *germ* is the sprouting section inside the kernel, from which a new plant can grow.) Many of these grains, however, are refined to make flour and cereals. In the process, the bran and germs are removed. Because thiamin is so important to good health, refined cereals and flour are enriched to replace some of the nutrients lost during processing.

Good food sources are lean pork; organ meats such as kidney, liver, heart; dried beans and peas; whole-grain and enriched breads and cereals.

IF YOU EAT TOO LITTLE

A mild shortage of thiamin over a period of time can cause loss of appetite, nausea, and a general apathy. Eventually it can lead to depression, irritability, and moodiness. It can cause digestive problems. Leg muscles may become tender and painful.

Deficiencies of thiamin cause *beriberi*—a disease of the nervous system. Nerve tissues are

weakened, especially in the arms and legs, and muscles become weak. Eventually heart disease, swelling of tissues, and paralysis occur.

Beriberi is common in countries where people live mainly on white polished rice. In polishing, the outer coat of the rice is removed, the part containing thiamin. As a rule, the rice is not enriched. Experimental programs have proved that death rates from beriberi drop dramatically a few months after thiamin is added to polished rice.

Riboflavin

Riboflavin is so important it can be found in almost any tissue of your body.

HOW RIBOFLAVIN HELPS YOU

Riboflavin is a part of several enzymes.

It helps your body produce energy and use proteins.

Riboflavin keeps eyes healthy and also keeps the skin smooth around the nose and mouth.

GOOD SOURCES

Good sources of riboflavin are milk; organ meats such as liver and kidney; lean meat; poultry; fish; eggs; dark green leafy vegetables.

IF YOU EAT TOO LITTLE

A deficiency of riboflavin causes a tissue breakdown. It affects the mouth, lips, tongue, and nose as well as the eyelids. Sores and cracks occur and vision dims.

Niacin

Since niacin is water soluble, excess amounts are excreted. Therefore your body needs an adequate daily supply.

HOW NIACIN HELPS YOU

Niacin helps cells use oxygen to produce energy.

It is necessary for the healthy condition of all tissue cells. Because of this, it helps keep your skin, tongue, digestive tract, and nervous system in good condition.

GOOD SOURCES

Important sources of niacin include liver; lean meat; poultry; fish; peanuts; peanut butter; legumes; whole-grain and enriched breads and cereals; milk.

The body can use the amino acid tryptophan to make niacin. Milk is a good source of tryptophan.

IF YOU EAT TOO LITTLE

A deficiency of niacin causes *pellagra*. The skin becomes rough and irritated, and continuous disturbances of the digestive system occur. The tongue becomes swollen and inflamed. If the disease is not treated, mental disorders occur, followed by death.

Pellagra can occur when people limit themselves to a small variety of foods and do not eat good sources of the vitamin. Pellagra is common in those parts of the world where people use corn as their main food. Corn is a poor source of niacin and does not contain the amino acid tryptophan.

IF YOU EAT TOO MUCH

There has been little concern about overuse of niacin. Because it is water soluble, excess amounts are removed with waste products. A few research reports, however, show that large doses may cause a flushing of the skin.

Vitamin B_6 (Pyridoxine)

Since vitamin B_6 is water soluble, the body does not store it. Therefore your body needs it in the diet every day.

HOW VITAMIN B_6 HELPS YOU

Vitamin B_6 helps your body produce energy.

It helps in the formation and maintenance of cells.

It keeps nerves healthy.

Vitamin B_6 plays a key role in the process that changes the amino acid tryptophan into niacin.

GOOD SOURCES

Good sources of vitamin B_6 are meat, liver, kidney, poultry, fish, whole-grain cereals, soybeans, peanuts.

Almost 80 to 90 percent of vitamin B_6 is lost when cereals

and grains are processed. Currently, this vitamin is not being added to refined cereals as part of the enrichment process.

IF YOU EAT TOO LITTLE

A serious shortage of vitamin B_6 produces symptoms similar to other B shortages. These include rough and sore skin around eyes and mouth, sore tongue and lips, dizziness, nausea, weight loss, and sometimes nervous disorders.

Vitamin B_{12} (Cobalamin)

HOW VITAMIN B_{12} HELPS YOU

Vitamin B_{12} promotes normal growth.

It is necessary for the normal development of red blood cells.

Vitamin B_{12} plays a role in the functioning of all cells, especially those in the bone marrow, nervous system, and intestines.

GOOD SOURCES

All animal foods, especially liver, kidney, milk, fish, poultry, and meat, are good sources of vitamin B_{12}.

IF YOU EAT TOO LITTLE

Deficiencies can retard growth in children. They can also cause anemia and nervous disorders.

Because vitamin B_{12} is so abundant in animal foods, serious shortages in average diets in the United States do not occur frequently. Strict vegetarians, however, can develop a vitamin B_{12} deficiency if they limit their diets to plant foods.

Deficiencies are common in countries where animal foods are not eaten, for religious reasons or because they are scarce or too expensive.

Pantothenic Acid

HOW PANTOTHENIC ACID HELPS YOU

Pantothenic acid is needed for growth and maintenance.

It helps supply energy for all body processes.

GOOD SOURCES

All foods are good sources of pantothenic acid. The best are organ meats such as liver and kidney; meats; poultry; fish; eggs; skim milk; legumes; smaller amounts in vegetables and fruit.

IF YOU EAT TOO LITTLE

Because pantothenic acid is found in all foods, deficiencies seldom occur.

Biotin

HOW BIOTIN HELPS YOU

Biotin is an essential part of several enzymes.

It helps the body use carbohydrates, proteins, and fats.

GOOD SOURCES

Biotin is available in organ meats, milk, egg yolk, whole grains, most vegetables, and some fruits.

IF YOU EAT TOO LITTLE

Because biotin is so widely available in food, there is little danger of a deficiency.

Folic Acid (Folacin)

HOW FOLIC ACID HELPS YOU

Folic acid helps the body manufacture red blood cells.

It is essential in converting food into energy.

GOOD SOURCES

Folic acid gets its name from the Latin word for leaf, *folia*. This is a clue to the best source of the vitamin—green leafy vegetables. Liver, heart, and kidney are also excellent sources. Meat, poultry, eggs, and whole-grain cereals are also important sources of folic acid.

IF YOU EAT TOO LITTLE

A deficiency of folic acid causes a type of anemia common in pregnant women. For this reason, the National Research Council has recommended that pregnant women supplement their diets with folic acid.

Vitamin C (Ascorbic Acid)

Vitamin C is water soluble and is not stored by the body. Therefore you need a daily supply for good health.



Green, leafy vegetables are the best sources of folic acid.

HOW VITAMIN C HELPS YOU

Vitamin C teams up with calcium to build healthy bones and teeth and to maintain and repair bones.

It is important in blood formation.

It helps speed recovery from cuts and wounds by fighting infection.

Vitamin C strengthens the walls of blood vessels.

Vitamin C also helps to form and maintain *collagen,* the substance that binds body cells together. If collagen is weak, hemorrhaging may occur. This can show up as bruises on the skin.

Some controversy exists about the use of massive doses of vitamin C to prevent common colds. So far, there is no conclusive evidence that large amounts of vitamin C either prevent or cure colds. Scientists caution people not to take more than 100 or 200 mg daily unless prescribed by a physician. Overdoses may cause ill effects such as diarrhea.

Commercially, ascorbic acid is used by food processors to keep cut fruit from turning dark. Consumers can buy powdered ascorbic acid in grocery stores for this same purpose.

GOOD SOURCES

Good sources of vitamin C are citrus fruits such as oranges, grapefruits, and tangerines; fruits such as strawberries, papayas, and cantaloupe; vegetables such as tomatoes, broccoli, raw cabbage, collards, mustard and turnip greens, and potatoes cooked in skins.

IF YOU EAT TOO LITTLE

A deficiency of vitamin C causes *scurvy.* Symptoms include general weakness and lack of appetite. The skin becomes brown, thickened, rough, and scaly. Body tissues hemorrhage, causing bruises on the skin. Soft tissues surrounding the joints become swollen, tender, and painful. An early sign of a deficiency is bleeding gums.

IF YOU EAT TOO MUCH

Not enough studies have been made on the possible health hazards of high doses of vitamin C. Preliminary studies show that overuse may cause diarrhea. There is also some evidence that, under certain circumstances, excess amounts may help kidney stones to form.

Let's Explore and Report

- Make up a list of foods that are good sources of each vitamin. From magazines or newspapers, clip pictures representing these foods. Paste on sheets of paper. Summarize what each vitamin does for you.
- Read several articles on the latest findings regarding the use of vitamin C to prevent colds.
- Using the menus collected earlier, select foods that are good sources of each vitamin discussed. Are all the vitamins available on each menu? If not, which are lacking? Why? Save the menus for later use.
- Refer to the daily food record you made earlier. Using the table *Nutrients in Food,* Appendix G, determine the amounts you ate of the following vitamins: A, C, thiamin, niacin, and riboflavin. How do the totals compare with the U.S. RDA? If you need more of any vitamins, which foods should you add to your diet? Save your record for later use.

MINERALS

Look for these terms

goiter
hemoglobin
minerals
osmosis
osteoporosis
sickle cell anemia





Florida Dept. of Citrus

Good sources of vitamin C include fruits, such as citrus fruits and strawberries, and vegetables, such as cabbage.

Like vitamins, minerals are used by the body for its many processes. Unlike vitamins, however, minerals become a part of the body—the bones, tissues, and fluids.

Generally, minerals are divided into two groups. The first group occurs in large amounts in both the body and in food. It consists of calcium, phosphorus, magnesium, chlorine, potassium, and sodium.

The second group, known as trace elements, occurs in tiny quantities. However, these minerals are just as vital to your health as those that occur in large amounts. Trace elements include iron, iodine, zinc, and fluorine.

Calcium and Phosphorus

Since calcium and phosphorus work closely together in the body, they are another excellent example of nutrient teamwork.

Surpluses of calcium and phosphorus are stored on the inside of the ends of bones. This serves as a reserve supply.

HOW CALCIUM AND PHOSPHORUS HELP YOU

They help build and maintain healthy bones and teeth. About 99 percent of the calcium and 80 percent of the phosphorus are in bones and teeth. An average-size man has about 1.2 kg [$2\frac{3}{4}$ pounds] of calcium and about 0.7 kg [$1\frac{1}{2}$ pounds] of phosphorus in his body. The remainder of these minerals is distributed in soft tissues and body fluids.

Calcium also:

- helps blood to clot during bleeding.
- helps the heart, nerves, and muscles function properly.

Phosphorus also:

- helps the body produce energy.
- regulates the balance between acids and alkalies.
- helps the body use nutrients.
- is an important part of essential body compounds.

GOOD SOURCES

Good food sources of calcium are milk, dairy products, and green leafy vegetables such as collards, dandelion greens, kale, mustard, and turnip greens. Processed fish eaten with bones, such as sardines, are also good sources.

Good food sources of phosphorus are milk, cheese, egg yolk, whole-grain breads and cereals, meat, fish, and poultry.

IF YOU EAT TOO LITTLE

A shortage of calcium over a period of time is one of the causes of *osteoporosis*—thinning of the bone. When the body needs calcium and does not get enough from food, it takes it from the bones. They become porous and fragile, and break easily. Bones of the spine and pelvis are most often involved. Osteoporosis occurs in



Minerals occur throughout nature—in the human body, in plants, and in rocks. The white crystals are calcite ($CaCO_3$ calcium carbonate) while the lavender are fluorite (CaF_2 calcium fluorite). Both minerals contain calcium, which is also found in plants such as kale and in animal products such as milk.

older people, especially women. It is estimated that in the United States, 30 percent of the people over 65, mostly women, have osteoporosis.

Why should you be concerned about the possibility of getting osteoporosis? Since osteoporosis is almost impossible to cure, prevention is the best action to follow. Research shows that young adults who have developed good bone structures before they are 20 years old are not likely to have osteoporosis in later life. This comes from eating an adequate daily supply of calcium and phosphorus during the growing years.

Nutrition studies show that many people in the United States do not get enough calcium. Food experts feel this is caused by two currently popular eating habits.

People who are weight conscious tend to avoid foods they think are fattening, such as milk—one of the best sources of calcium. Second, for some unknown reasons, the use of fresh vegetables is declining, and yet leafy green vegetables are also good sources of calcium. Thus in a nation with a relatively abundant food supply, people risk a calcium deficiency by not choosing the right kinds of food.

Diets with enough protein and calcium will usually have enough phosphorus.

Magnesium

Although the average adult body contains less than 28 g [1 ounce] of magnesium, this mineral is essential for life. About half of the magnesium is in the skeleton and the remainder is in the soft tissues and the blood.

HOW MAGNESIUM HELPS YOU

Magnesium is involved in basic cell processes that produce energy.

It keeps the nervous system working normally.

Magnesium helps muscles, including the heart, to work properly.

It helps the body use carbohydrates and proteins.

GOOD SOURCES

Good food sources of magnesium are whole-grain cereals and breads, nuts and legumes, dark-green leafy vegetables, and meat.

IF YOU EAT TOO LITTLE

Magnesium is widely available in food, so shortages in the





Maine Sardine Council

Besides milk, other foods are also good sources of calcium. These include green, leafy vegetables such as kale and processed fish eaten with bones such as sardines.

average diet are uncommon. However, serious shortages are found among alcoholics and other drug addicts, who generally do not eat enough food. One of the symptoms of a magnesium shortage is muscle tremors or shaking.

Chlorine, Potassium, and Sodium

The three minerals chlorine, potassium, and sodium are another good example of nutrient teamwork.

HOW CHLORINE, POTASSIUM, AND SODIUM HELP YOU

They are responsible for maintaining the water balance in your body.

These minerals help the cells absorb nutrients from the blood stream. They carry out the process of *osmosis,* by which substances pass back and forth through cell walls. (See page 51.) Sodium and chlorine are found in the fluids outside the body cells. Potassium is mostly in the fluids inside the cells.

They are needed for normal muscle action, including the beat of the heart.

They help to balance the acids and alkalies in the body.

They are essential for the regular functioning of the nervous system.

GOOD SOURCES

Chlorine, potassium, and sodium are present in most foods. Also, sodium in the form of table salt is often added to foods as they are prepared or eaten. Table salt is the most concentrated source of sodium.

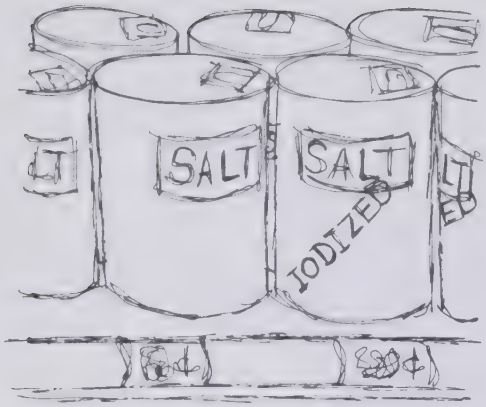
IF YOU EAT TOO LITTLE

Shortages of chlorine, potassium, and sodium are uncommon. Generally, they occur only under extreme conditions. For instance, strenuous activity or high temperatures cause heavy perspiration. This results in large losses of sodium. This can be remedied by adding sodium to the diet.

IF YOU EAT TOO MUCH

Most physicians feel people eat too much sodium. Because there may be a relationship between sodium in the body and high blood pressure, they often recommend cutting down on the use of table salt.

If excess amounts of sodium are eaten, they are normally removed by the body as waste. In certain kinds of diseases, however, the body cannot get rid of excess sodium. As a result, excess water accumulates in the cells, causing edema or swelling. People with this problem are generally put on low-sodium diets, which means they can



Iodized salt is one of the main sources of iodine for the prevention of goiter.

have only a limited amount of sodium every day.

Iron

An adult man has about 4 g [$\frac{1}{7}$ of an ounce] of iron in his body. Excess iron is stored in the liver, spleen, and bone marrow. A reserve is essential for emergency situations, such as a severe cut causing high blood loss.

HOW IRON HELPS YOU

Iron teams up with protein to make *hemoglobin,* the red substance of blood. Hemoglobin carries oxygen from the lungs to muscles, brain, and other parts of the body. Hemoglobin gives blood its characteristic red color.

Iron is present in all cells, helping them to use oxygen.

GOOD SOURCES

Liver is the best source of iron. Good food sources include kidney, heart, lean meats, egg yolks, dried beans and peas, dark-green leafy vegetables, dried fruit, whole-grain and enriched breads and cereals, and molasses.

IF YOU EAT TOO LITTLE

Although many foods supply iron, women and young girls tend to have serious iron shortages. This is because they lose varying amounts of iron every month during menstruation. The best solution is for women to be selective in their food choices. The body stores iron, so they need to eat foods every day that provide good amounts of iron. Especially if a woman is on a low-calorie diet, she may not get enough iron every day. Her physician may prescribe iron supplements to take while she diets.

If people continually get less iron than they need, anemia results. Symptoms are poor appetite, pale skin, excessive tiredness, and a feeling of weakness.

Babies can sometimes develop iron deficiencies. Newborn infants usually have a reserve supply of iron that lasts for the first few months. After that, if they are fed only milk and do not get foods containing iron, they may become anemic. Milk does not supply iron.

Sickle cell anemia is not caused by lack of iron or any other nutrients. This disease, which mainly affects black people, is a hereditary illness. The red blood cells have an abnormal crescent or sickle shape and cannot carry enough oxygen to supply the body's needs.

Iodine

HOW IODINE HELPS YOU

Iodine helps the thyroid gland to work properly, thereby preventing *goiter*—a large swelling in the neck. With the help of iodine, the thyroid gland, located in the neck, produces the hormone thyroxin. As discussed in Chapter 4, thyroxin controls the body's basal metabolic rate, BMR. If the body lacks iodine, the amount of thyroxin produced gets lower. In order to make up for the low amount, the thyroid gland works overtime and becomes enlarged. This is the condition known as goiter. For some unknown reason, women are more apt to get goiter than are men.

GOOD SOURCES

Good sources of iodine are iodized table salt and saltwater fish and shellfish.

IF YOU EAT TOO LITTLE

Except for saltwater fish and shellfish, most foods are not good sources of iodine. Many soils do not contain iodine. When they do, plants do not always absorb it. For instance, soil in the midwest and the Great Lakes region contains no iodine, so foods grown there lack the nutrient. Goiter was so common in this area that for

years the region was known as the "goiter belt."

Once scientists discovered that iodine could prevent goiter, they decided to add it to table salt, which is used by almost everyone. It was added in the form of potassium iodide, a harmless chemical. As people began to use iodized salt, the number of goiter cases dropped dramatically. However, in recent years people have drifted back to using plain table salt. As a result, the number of goiter cases is increasing.

Iodized salt tastes no different than plain table salt. It looks the same and can be used the same as ordinary salt. The only difference is it protects you against goiter.

Zinc

Scientists are just beginning to uncover the role zinc plays in nutrition.

HOW ZINC HELPS YOU

Zinc is present in most tissues of the body, although it is more concentrated in liver, muscles, and bones. It has a role in healing wounds. It may also be linked with the reproduction process and with the senses of taste and smell.

GOOD SOURCES

Zinc is widely distributed in most foods. Good sources are seafood, meat, liver, eggs, milk, legumes, and whole grains.

IF YOU EAT TOO LITTLE

Not enough studies have yet been made to determine if zinc shortages exist in the United States. Diets that include animal foods will probably have adequate amounts of zinc. People who eat only vegetables and cereals may develop zinc deficiencies.

Zinc deficiencies have been reported in the Middle East, usually in countries where diets also lack protein and iron. The deficiencies cause retarded growth.

Fluorine

Fluorine was once considered essential only in the prevention of tooth decay. Now it is recognized as an essential nutrient. Studies show it may play a role in maintaining normal bone health.

Fluorine is not widely available in common foods. In some areas, however, it occurs as part of the natural minerals in the drinking water. In other areas, it is added to the water supply.

In all cases where fluorine has been added to the water supply, a significant reduction occurred in tooth decay in children. The protection carries over into adulthood.

Fluorine is also added to many toothpastes.

Let's Explore and Report

- Using local resources, find out if your community is adding fluorine to its water supply. Perhaps fluorine occurs naturally in your area.
- Refer to the daily food record you kept earlier. Using the table *Nutrients in Food,* Appendix G, determine how much calcium and iron you have eaten. How do the amounts compare with the U.S. RDA? If you lack either of the minerals, what foods should you add to your diet to get your daily supply? Save your record for use in Chapters 6 and 7.
- Refer to the three menus you collected earlier. Select foods that are good sources of the minerals studied. Save your menus for later use.
- Select one nutrient. Use library references to make a written report. Include how it was discovered and any new facts revealed by recent research.
- Form committees to make posters for each nutrient. Display in classroom and school lunchroom.
- Collect advertisements for foods or supplements that make "miracle" claims to improve health. Analyze these statements in light of what you have read in this chapter.

What Would YOU Do?

- Your friend does not want to gain weight, so she refuses to drink milk. She has not had any milk for months and insists it is the only reason she has kept her weight at a good level.

DAILY FOOD GUIDE

Chapter 6
Food Choices for a Day

To help you to . . .

- Compare how life styles affect meal patterns.
- Apply nutrition information to your food choices.
- Make the best use of your resources in meal planning.
- Evaluate your food choices every day.
- Plan nutritious, flavorful foods every day.

How often during the day do you decide what you are going to eat? Many teenagers are faced with making their own food choices at least once during the day, sometimes more often. They may select their own lunch or a snack after school. Some may even prepare their own dinner. Today, many individuals are responsible for their own food choices.

Look for these terms
balanced meal
Bread-Cereal Group
Daily Food Guide
meal patterns
Meat Group
Milk Group
pot liquor
snack
Vegetable-Fruit Group

The Daily Food Guide can help you select nutritious foods for the day.

MEAL PATTERNS

A few years ago, planning three meals a day for a family was a fairly simple matter. Almost everyone ate at home regularly. Those who worked or went to school usually carried lunches. Homemakers planned and prepared most of the meals. They were responsible for serving their families a variety of nutritious food in the form of three meals a day. In many families, this meal pattern still exists. In others, however, meal planning has become more complicated.

Research shows most families rarely eat breakfast together on weekdays. Members usually get up at different times and often make their own breakfast. Many people, especially singles, like to eat breakfast in a restaurant. Far too many people, however, go to work or school without eating any breakfast.

When it comes to lunch, homemakers and those children too young to attend school generally eat at home. People who work either carry lunches or eat in cafeterias or restaurants near their work. Students carry lunches or buy them at school or nearby snack shops.

In some homes, dinner is still a family affair. In others, the whole family gets together for dinner only a few times during the week. People have varied work and activity schedules. Besides going to school or work, they do volunteer work or attend night classes, club meetings, sports events, and shows. Many have second jobs. Others work on night shifts, which means they sleep during part of the day. As a result, family members are left to their own food choices a good part of the time. They get their own meals from the food supply in the

cupboard, refrigerator, and freezer. People who have evening activities after work or school may find it simpler to eat in a restaurant.

Where once the homemaker was responsible for the family's nutrition, this may no longer be true. Instead it is up to individual members to be sure they get the variety of food they need to stay healthy and active.

Snacks

A snack is any food eaten between the three main meals. It can be a bag of popcorn, an apple, or a hamburger and french fries. People may snack because they are bored, tense, or lonely, or just to be sociable.

Today, snacking may be called a way of life in the United States. Some people eat almost constantly. They snack as they watch television and whenever friends drop in. Morning and afternoon coffee breaks in offices and factories encourage the custom. Vending machines offer assorted snacks, so wherever you are you can generally buy food to munch on.

Food experts claim that on weekends, beginning Friday night and ending Sunday night, some individuals eat as many as 30 times. Most of this food is in the form of snacks. How many times do you eat on a typical weekend?

Studies show that every year the United States produces billions of dollars worth of cookies, crackers, candy, and other snack foods. Food experts estimate that 25 percent of the food eaten by teenagers is junk food or empty calories.

Since snacking is so common, many nutritionists no longer insist on the traditional three-meals-a-day eating pattern. Instead, they urge people to consider the food they eat for the entire 24-hour day. All the food eaten, whether snacks or regular meals, should be nutritious to help the body stay healthy and energetic.

What does all of this have to do with you? You may snack many times or prefer only three main meals a day. During some part of the day, however, you alone are probably responsible for the food you select. How can you be sure you are choosing food to help you feel and look good?

Variety—The Key to Nutrition

A sure way to get good nutrition every day is to choose your foods according to the Daily Food Guide. This scientific tool makes it easy for you to select a variety of the right kinds and amounts of food.

Through years of research, scientists learned that certain kinds of foods have large amounts of one or more nutrients. Therefore they divided all foods into four groups according to the nutrients they contain: Milk Group, Vegetable-Fruit Group, Meat Group, and Bread-Cereal Group. Scientists also learned the body needs these foods in certain amounts to get the nutrients required for good health. Thus they listed the number of servings needed from each group. A *balanced meal* has foods from all four food groups and provides about one-third of the day's nutrition needs.

The Daily Food Guide, also called the Basic Four Food Groups, is used in the United States and Canada. It is based on food customs in these two countries. Other countries also developed their own food guides, based on good nutrition. The number of basic groups varies, depending on local food supplies and customs.

Country	No. of Basic Food Groups
Egypt, Central America	3
Italy, Korea, Puerto Rico, India	5
Japan, Russia, Ghana, France	6
Bulgaria, Italy, Mexico, Spain, Sweden	7
Lebanon	8

A food guide is just that—a guide to selecting the right kinds of food in the right amounts every day. The basic

foods provide a foundation but they are not necessarily the only foods you should eat.

Often food needs vary widely as compared to the Daily Food Guide recommendations. Many people need larger servings. Others, especially children, will not need as much.

The teenage years are periods of rapid growth and adjustment. Teenage males generally have high energy requirements. Most need amazingly large amounts of food—more than those recommended in the guide. These needs can be satisfied by eating more and larger servings of the recommended foods. Some teenagers, however, have a tendency to snack on sweets and soft drinks—high-calorie foods with little in the way of nutrition.

Many teenage girls are figure conscious and may go on crash diets harmful to their health. An effective weight-reducing diet can be based on the Daily Food Guide. (See Chapter 7.)

DAILY FOOD GUIDE

Use the Daily Food Guide as a foundation for your daily food choices. If the number of servings recommended is not enough food for you, add more.

Milk Group

Food: Milk, buttermilk, and dairy products such as cheese, ice cream, sour cream, and yogurt. If you buy low-fat or skim milk, be sure it is fortified with vitamin A.

Nutrients: Calcium and phosphorus for healthy bones and teeth. Excellent source of high-quality proteins. Also contains riboflavin, and vitamins A and D. You cannot get enough calcium and riboflavin for your body if you do not use milk or milk products.

Amount needed:

	Servings
Children under 9	2–3
Children 9–12	3 or more
Teenagers	4 or more
Adults	2 or more
Pregnant and nursing women	4 or more

What is an average serving?

1 240 mℓ [8-ounce] cup milk, buttermilk, skim milk, or plain yogurt.

1 240 mℓ [8-ounce] cup baked custard.

Equivalents:

1 slice Swiss cheese = 120 mℓ [½ cup] milk.

1 slice American process cheese = 120 mℓ [½ cup] milk.

120 mℓ [½ cup] ice cream = 60 mℓ [¼ cup] milk.

120 mℓ [½ cup] creamed cottage cheese = 80 mℓ [⅓ cup] milk.

2.5 cm [1-inch] cube cheddar cheese = 120 mℓ [½ cup] milk.

Uses: Serve as purchased or in combination with other foods: cheeseburger, rice cooked in milk, casseroles, cream sauces, cheese cake, salads, custard pie.



The Milk Group is a good source of calcium, phosphorus, and high-quality proteins. It also contains riboflavin and vitamins A and D.

Vegetable-Fruit Group

Food: All fruits and vegetables such as citrus fruits, papayas, mangoes, greens, tomatoes, chili peppers, okra, squash, cabbage, pumpkin, white potatoes, and sweet potatoes. *Pot liquor,* the water in which vegetables are cooked, should be used for soups, stews, and sauces. It contains valuable

water-soluble vitamins and minerals lost by the vegetables during cooking.

Nutrients: Supplies all of vitamin C and includes some of the best sources of vitamin A. Also supplies some calcium, phosphorus, iron, and B vitamins, as well as fiber.

Amount needed: Four servings.

- A citrus fruit or other source of vitamin C such as cantaloupe, papayas, strawberries, tomatoes, cabbage, collards, mustard greens, and broccoli should be eaten daily.
- A dark-green or deep-yellow vegetable or fruit should be eaten every day as a good source of vitamin A. These include cantaloupe, papayas, collard greens, turnip tops, mustard greens, winter squash, sweet potatoes, carrots, and pumpkin. Remember, the deeper the color, the more nutrition you get.
- Two other fruits or vegetables.

What is an average serving?

One medium fruit, such as an orange.

Two small fruits, such as two plums.

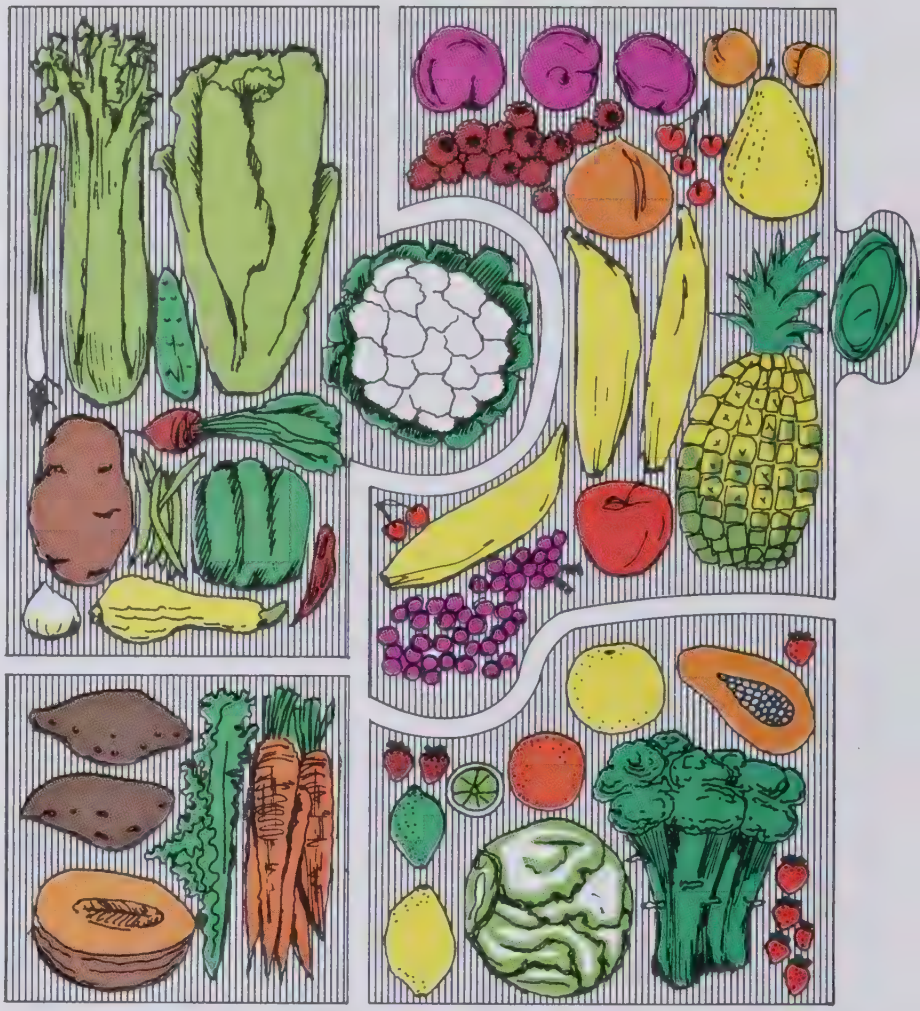
A portion, such as ½ banana or mango.

240 mℓ [1 cup] fresh berries, 10–12 grapes or cherries.

120 mℓ [½ cup] fruit juice.

120 mℓ [½ cup] cooked vegetables.

240 mℓ [1 cup] raw leafy vegetables.



The Vegetable-Fruit Group supplies all of the vitamin C. It also includes some of the best sources of vitamin A and supplies some calcium, phosphorus, iron, and B vitamins as well as fiber.

Uses: This is one of the most versatile food groups. Besides being nutritious, the foods can be used to give color, texture, and flavor to meals. Most foods in this group make excellent snacks.

Meat Group

Food: All meats, including roasts, ribs, and chops of beef, pork, veal, and lamb. Organ meats such as kidney, liver, and heart. Pork chitterlings (intestines) and pig's feet, knuckles, tails, and ears. Rabbits, squirrels and wild game such as venison. Poultry, including game birds such as wild ducks and geese. Fish and shellfish such as crabs and shrimp.

Eggs.



The Meat Group is the main source of high-quality or complete proteins. It also provides iron and B vitamins.

Dried beans or peas such as garbanzos (chickpeas), red kidney beans, blackeyed peas, split green peas, and lima beans, as well as nuts, peanuts, and peanut butter.

Nutrients: Main source of high-quality proteins. Also excellent source of iron and B vitamins.

Amount needed: 2 servings.

Pregnant and nursing women need three or more servings.

What is an average serving?

60 to 85 g [2 to 3 ounces] lean cooked meat, poultry, fish—all without bone or fat.

2 thin slices of meat.

1 hamburger patty 8 × 1 cm [3" × ½"].

1 thick or 2 thin chops.

1 small chicken leg or thigh.

1 average-size fish fillet.

4 fish sticks.

80 mℓ [⅓ cup] canned tuna or salmon.

2 medium-sized eggs.

240 mℓ [1 cup] cooked dried peas or beans.

120 mℓ [½ cup] nuts.

80 mℓ [⅓ cup] peanuts.

60 mℓ [4 tablespoons] peanut butter.

Uses: Generally used as the main food in the meal. Since the body cannot store amino acids, a food from this group or the Milk Group should be included in each main meal.

Bread-Cereal Group

Food: Whole-grain or enriched breads, cereals, and grain products, including rice, grits, cornmeal, oatmeal, macaroni, noodles, and pasta.

Since nutrients are lost when grains are processed, be sure to look for the words *fortified* or *enriched* on the labels of white flour, white bread, and ready-to-eat cereals. A nutrition label on the package gives the amounts of the nutrients. (See Appendix E.) Also look for this labeling on packages of crackers and cracker-type snack foods.

Nutrients: Excellent source of carbohydrates, iron, and B vitamins. The protein is not high quality but quality can be improved *if* served with foods from the Milk or Meat Groups.

Amount needed? 4 servings.

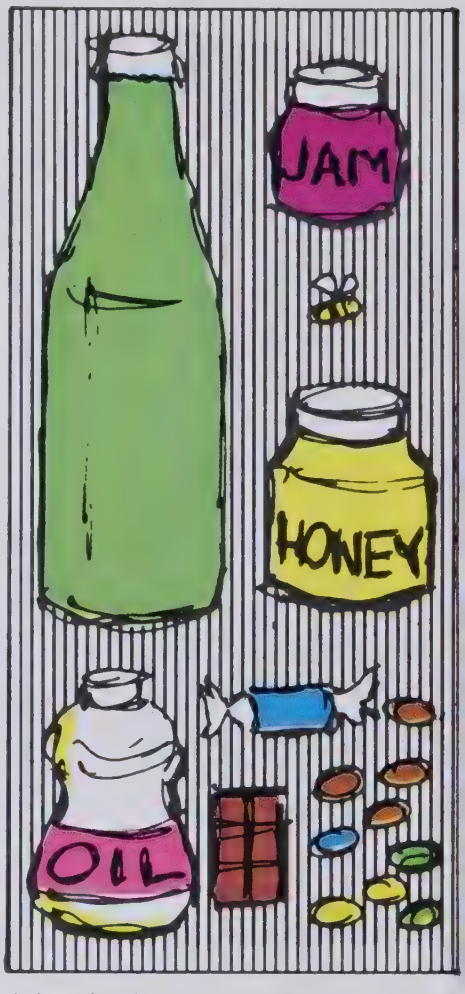
What is an average serving?

30 g [1 ounce] (about 240 mℓ or 1 cup) ready-to-eat cereal.

120-180 mℓ [½-¾ cup] cooked cereal, cornmeal, grits, or rice, or pasta.



The Bread-Cereal Group is an excellent source of carbohydrates, iron, and B vitamins. Although the protein foods in this group are not high quality, they can be improved by serving them with foods from the milk or meat groups.



Other foods include fats, oils, and sweets. Most of these foods are high in calories and low in nutrients.

1 slice whole-grain or enriched bread.

1 enriched or whole-grain roll, biscuit, or muffin.

1 bagel 8 cm [3"].

2 tortillas.

1 wedge pizza crust ($\frac{1}{8}$ of 40 cm [14"] diameter pizza).

1 5 cm [2"] square cornbread.

1 10 cm [4"] pancake.

Uses: Use in combination with other food groups.

Other Foods— Fats, Oils, Sweets

Many foods not listed in the four basic groups contain only a few nutrients but they add flavor and variety to meals. These foods include:

Butter or margarine.

Oil.

Salad dressings.

Dips.

Gravies, sauces.

Candies, jams, jellies, sugars, syrups.

Soft or carbonated beverages.

Most of these foods are high in calories so use them only in small amounts to give flavor to

the basic foods. If you are watching your weight, limit these foods.

How To Use the Daily Food Guide

It's a simple matter to talk about the rules for nutritious eating. Applying them to real-life situations can be confusing and frustrating.

All people have their own food habits, food preferences, and life styles. Most eating habits usually have good points and bad points. Eating a healthful daily diet simply means keeping the good food habits and replacing the bad ones. Using the Daily Food Guide does not mean you have to give up all of your favorite foods.

Each of the food groups includes a wide variety of food choices. The secret of good nutrition is simple—from day to day select as many different kinds of foods as you can from each of the food groups. Include one food from each group at all three main meals. Use the remaining foods for snacks during the day.

Some health experts prefer to break the Daily Food Guide down into more detail. They use seven groups instead of four. See chart on this page. Perhaps you may feel this grouping would be easier for you to use. The choice is yours. Note that the seventh group is *butter or margarine,* listed in the "Other Foods" category of the Daily Food Guide. This is to remind people that fat is needed in the diet every day but only in a limited amount.

Food Mixtures

Trying to classify food mixtures such as stew into one of the food groups can be puzzling. Some mixtures fall into clear-cut categories. A bowl of cereal with 120 mℓ [½ cup] of milk, for instance, gives you one serving from the Bread-Cereal Group and a half serving from the Milk Group.

How would you classify a chef's salad with egg slices and strips of ham and turkey? Pizza? Tacos? Chili? Where would you list meat extenders such as textured vegetable protein mixed with hamburger? Convenience foods are often mixtures of many different foods. Where should they be grouped?

Most of these foods usually fit into two or more groups. A chef's salad, for instance, may have one egg, which would give you a half serving from the Meat Group. It might also have enough meat or poultry strips to equal one slice, giving another half serving from the Meat Group, to make a total of one. The salad greens would give at

DAILY FOOD GUIDE DIVIDED INTO SEVEN GROUPS

1. *** Milk and Milk Products**
   2 servings for adults.
   3 servings for children.
   4 servings or more for teenagers and pregnant and nursing women.
   Milk, buttermilk, cottage cheese, yogurt, cheeses, ice cream.

*** Fruits and Vegetables**

2. *Yellow and leafy green vegetables*—1 serving.
   Carrots, pumpkin, squash, yams, collard greens, turnip tops.
3. *Citrus fruits and tomatoes*—1 serving.
   Oranges, grapefruits, tangerines, tomatoes.
4. *Other fruits and vegetables*—2 servings.
   Potatoes, broccoli, green peppers, cauliflower, papayas, berries, cherries.
5. *** Meat, poultry, fish, eggs, dried beans, and nuts**—2 servings.
6. *** Breads, cereals, and pasta** (whole grain or enriched)—4 servings.
7. Butter and fortified margarine—1 serving.

* Basic four food groups in the Daily Food Guide.



American Lamb Council
Food mixtures such as this lamb and bean stew may be difficult to classify into the Daily Food Guide groups.

least a whole serving from the Vegetable-Fruit Group.

The chart on this page shows several mixtures divided into food groups.

Nutrition labeling on some products can help you to decide how a food is to be grouped.

Eating out can be challenging and difficult when it comes to grouping foods. For instance, exactly what is in chop suey or beef stew served in a restaurant? Sometimes you can get a clue from the description on the menu. "Texas Stew" may be described as "man-size chunks of beef and potatoes with carrots and peas, smothered in a rich, flavorful tomato sauce." Depending on the portion size, the beef and potatoes, carrots, and peas can be counted as parts of the Meat and Vegetable-Fruit Groups. Tomato sauce, no matter how rich and flavorful, should not be counted as a part of the Vegetable-Fruit group since the amount of tomato is uncertain.

MIXTURES CLASSIFIED INTO FOOD GROUPS

Food	Milk Group	Vegetable-Fruit Group	Meat Group	Bread-Cereal Group
	Servings	Servings	Servings	Servings
Tacos	¼	¼	½	½
Pizza	¼	(Depends on kind of sauce)		1
Spaghetti	¼	(Depends on kind of sauce)		1

How Well Do You Eat?

Refer to the day's food record you kept in Chapter 5. How does it compare to the Daily



Thank You Puddings and Pie Fillings

Desserts such as puddings are a flavorful way to add milk to a meal.

Food Guide? Do you lack any servings? In what group?

Most teenagers eat the recommended amounts from the Meat and Bread-Cereal Groups, but fall short in the Milk and Vegetable-Fruit Groups.

Perhaps you do not eat enough from the Milk Group. In that case, make an extra effort to eat foods from this group every day. Why? Because they contain essential calcium, riboflavin, and high-quality proteins needed by your body. Without this group you cannot get enough calcium to build strong, healthy bones and teeth. If you dislike milk, you might enjoy the tangy flavor of buttermilk or yogurt made from skim milk, both low in calories. Try milk puddings such as tapioca, custard, or packaged dessert puddings. Add cheese to sandwiches or as a topping for casseroles. Cheese also makes an excellent snack.

If you're short in servings from the Vegetable-Fruit group,

you are denying your body important vitamins and minerals. Perhaps you enjoy snacking on candy, potato chips, or a soft drink. Nutritious snacks can also give you enjoyable flavor and texture. Replace empty calories with health-giving foods—crisp, sweet apples, tangy oranges, or crunchy celery and carrots.

Use Nutrition Labeling to Select Food

You can, if you wish, use nutrition labeling to plan your meals. Although this method is a little more complicated, it is more accurate.

As discussed in Chapter 4, the U.S. RDA is a condensed version of RDA (Appendix C). The recommendations were set at the highest level possible and provide a wide margin of safety for all nutrients. Most people, therefore, do not need 100 percent of the U.S. RDA for every nutrient. Appendix D, *Percentage of U.S. RDA,* gives the percentages people at different age levels need of each nutrient listed in the U.S. RDA. For example, a five-year-old child needs only 50 percent of the vitamin A shown in U.S. RDA, while a sixteen-year-old male needs 100 percent. Study the chart. How do your needs differ from adults? From young children?

How can you use this information to plan meals? Determine the percentages you need of each nutrient listed in Appendix D. Plan your day's food

SAMPLE WORKSHEET

Food for a day, female, 16 years old

Food	Amount Eaten	Calories	Percentage of U.S. RDA							
			Protein	Vitamin A	Vitamin C	Thiamin	Riboflavin	Niacin	Calcium	Iron
Ready-to-eat cereal	1 ounce	110	4	20	20	25	25	20	—	20
Milk	½ cup	80	10	3	2	2	12	—	15	—
Orange juice	½ cup	60	1	5	100	8	1	2	1	1
Peanut butter	2 tbsp.	180	16	—	—	4	1	2	1	1
Bread	2 slices	160	8	—	—	8	8	8	4	8
Jelly	1 tbsp.	50	—	—	2	—	—	—	—	2
Margarine	1 pat	35	—	4	—	—	—	—	—	—
Banana	1	100	2	4	20	4	4	4	—	4
Milk	1 cup	160	20	6	4	4	25	—	30	—
Ham	1 ounce	180	60	—	—	35	15	25	2	20
Mashed potatoes	¾ cup	150	4	6	22	9	4	8	3	3
Spinach	½ cup	20	4	145	40	4	8	2	8	10
Applesauce	½ cup	115	—	1	2	2	1	—	—	4
Brownie	1	100	2	—	—	2	2	—	—	2
Iced tea	1 glass	—	—	—	—	—	—	—	—	—
Ice cream	½ cup	130	8	6	1	2	8	—	10	—
Total:		1630	139	200	213	109	114	71	74	75
Goal for a 16-year-old female		2100	75	80	75	75	85	30	120	100

Adapted from USDA Agric. Inf. Btn. 382

and list the percentages shown in the table, *Nutrients in Food,* Appendix G. Nutrition labels on some food packages also give this information. (See Appendix E.) Add the percentages and compare them with your needs. The sample on page 108 shows the day's food for a 16-year-old female, with percentages listed for the nutrients. Note that she had more nutrients than she needed, except for calcium and iron. The food provided fewer calories than recommended but it was enough for her since she was not very active.

Do you lack any nutrients? Appendix H lists foods which are important sources of nutrients, along with the percentage of the U.S. RDA.

Which method should you use for planning meals? The choice is yours. Whether you use the Daily Food Guide with four or seven food groups, or nutrition labeling, you will be assured of good nutrition in your daily food choices.

Let's Explore and Report

- On page 106, you were asked to compare the day's food record you kept in Chapter 5 with the Daily Food Guide. If you lack any nutrients, determine how you can improve your food choices. After a few weeks, record the food you have eaten for a typical day. Have you improved your eating habits? In what ways?
- Select six of your favorite foods which are mixtures, such as lasagna or enchiladas. Make up a chart showing the amount each contributes to the Daily Food Guide.
- Plan a weekday's food for the following:

  A 17-year-old male.

  A family of five—father, mother, 16-year-old girl, 13-year-old boy, and 3-year-old boy.

  Use either the Daily Food Guide or nutrition labeling. Save the menus for use later in the chapter.

PLANNING MEALS

Look for these terms

color
flavor
garnish
leftovers
make-overs
portion control
resources
texture

Although nutrients are most important in selecting foods and planning meals, other factors should also be considered. Among these are the resources you have and the qualities that make meals look and taste good.

Resources

Resources are those items you can use for your work or your activities. They can be material resources such as food or they can be personal resources such as your skills. Your time, skills, money, and kitchen equipment are valuable resources. Be aware of them when planning any meal.

TIME

Time is an essential part of meal preparation. How much time will you have to prepare the food? If you have time to spare, you can use complicated recipes or select foods that take long to cook. However, if your time is limited, easily prepared, quick-cooking foods should be your choice. You might even want to select recipes you can make up ahead of time.

How much time do you have for shopping? If you can shop only once a week, plan your meals so you use the highly perishable food first. Otherwise it might not hold up well in storage. Liver, for instance, loses freshness quickly. Serve it no later than a day after you purchase it, unless you freeze it for future use.

Perhaps you are planning a dinner for friends and must do the shopping several days beforehand. In that case, select produce that will keep well in the refrigerator. Then you won't be disappointed in its condition at serving time. Boston lettuce, for example, makes a delectable salad but it is extremely fragile. It might not keep its quality if refrigerated for several days.

Prepare main-dish meals ahead and freeze . . .



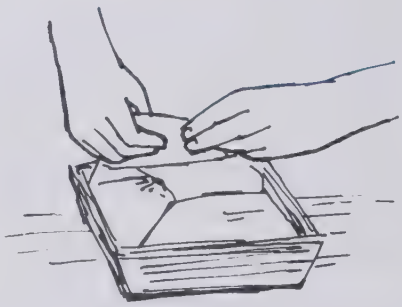
a

Line a pan with heavy-duty foil and pour mixture into pan.



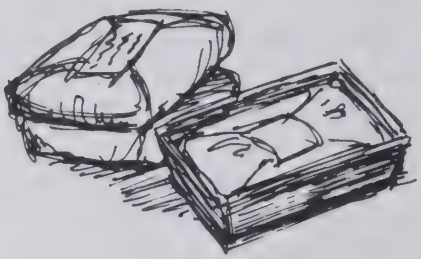
b

Fold foil tightly across top twice.



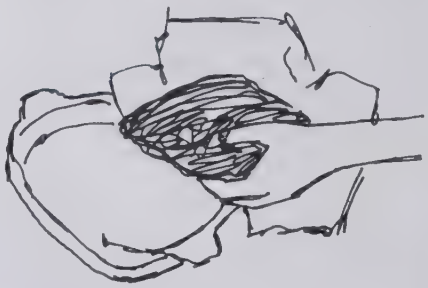
c

Fold ends under twice, squeezing out air.



d

Label package and freeze in pan. When frozen, remove from pan and store in freezer.



e

When needed, remove foil and place frozen food in pan. Cook according to recipe directions, allowing a little extra time for the food to defrost.

Greens such as romaine or head lettuce store better and would be a good choice.

SKILLS

Be realistic about your food preparation skills. If you work slowly or are unsure of yourself, select simple recipes you can prepare easily. Save the more complex ones for those days when you have time to practice and increase your speed without feeling hurried. As with any other skill, mastering food preparation calls for patience, knowledge, and practice.

Some day you might want to venture into advanced procedures such as the creative techniques described in Chapter 23. If you do, begin with the more simple ones. When you have mastered them, move on to the more complicated ones. Just as an athlete must learn the fundamentals first and then practice, so must anyone interested in preparing food skillfully and creatively.

COST OF FOOD

People usually set a limit for their weekly food costs, so food selections should be kept in line with the budgeted amounts. Within this cost limitation, however, choose foods to give you the best nutrition and flavor. Guidelines for buying are discussed in Chapters 10 and 11.

KITCHEN EQUIPMENT

Another resource to consider when planning a meal is the

Reynolds Aluminum

When you begin to cook, select recipes that are easy to prepare, such as pot roast baked in foil, baked potatoes, and a tossed salad.





When you select recipes, be sure to consider your resources—the time and equipment you have available, your skills, and the amount of money you can spend on food.

equipment in your kitchen. Sometimes a recipe may specify an appliance you do not have. If a recipe calls for an electric frypan or skillet, it can usually be prepared on top of the range or in the oven. However, if it calls for a specialized appliance such as a blender or waffle iron, select another recipe. As a rule, another appliance cannot be substituted.

The type of range you have also affects the food you select. If your range has one oven and you want to bake several foods, be sure they all use the same temperature. If you bake a casserole at 180 °C [350° F], you cannot bake corn bread at 220 °C [425° F] at the same time. Instead, select a bread that bakes at the same temperature as the casserole. Many ranges use the oven compartment for broiling, so you could not serve baked and broiled foods at the same time.

You will want to use the least amount of energy fuel when you prepare your meal. For more information on conserving energy fuel, see Chapter 16.

FOR MEALS THAT APPEAL

The food service industry has many hints on how to make food more appealing. Restaurants are very much aware of how people feel about food. They know that if food looks, smells, and tastes good, customers will return.

Study the menus in restaurants and analyze the combinations offered. In most cases, besides being nutritious, the foods have been selected to complement each other in flavor, texture, color, shape, size, and temperature.

- *Flavor.* Food flavors should harmonize. Avoid serving all strong-flavored or all mild-flavored foods in one meal. Avoid repeating the same flavors. A fruit salad with the main course means you would not serve a fruit dessert. Rich foods need the contrast of low-fat foods such as salads, green vegetables, and fruits.
- *Texture.* Contrasts in texture make a meal more interesting. If all the foods are soft and mushy or hard and crisp, the meal can be dull and unappe-



General Mills, Inc.
To make meals more appealing, consider the flavor, texture, color, shape, and size of the food.

tizing. For instance, stews and soufflés, usually soft, can be served with crisp salads and crunchy breads and crackers.

- *Color.* When planning a meal or snack, select foods in a variety of colors. Besides giving eye appeal, color also stimulates the appetite. This is where fruits and vegetables can be helpful. They come in a wide assortment of colors and can be used to complement the main course.
- *Shape and Size.* Food can be served in many shapes and sizes. Meat can be baked whole and then sliced for serving. It can also be cubed, diced, and even ground and reshaped into a meat loaf or patties. Vegetables or fruits can be served whole, sliced, or diced.
- *Temperature.* Outdoor weather often determines the food temperatures people prefer. In hot weather, many people enjoy cold foods and beverages such as salads and iced tea. In cold weather, however, most people choose hot foods. These preferences are psychological. Food may be ice cold or steaming hot when eaten, but it is all lukewarm by the time it reaches the stomach. However, on a cold, blustery day, most people find a bowl of hot soup makes them feel warmer and more comfortable than a cold salad does.

Plan Ahead

As discussed earlier, the best way to have good nutrition is to plan the food you are going to eat for a whole day. To achieve the greatest variety in foods eaten, it's a good idea to plan meals and snacks for several days at a time, perhaps a week.

Planning ahead has another advantage, which relates to food shopping. It enables you to buy a large piece of meat such as a roast or turkey and use it in different ways. For instance, you might buy a large pot roast. Be-



Thank You Puddings and Pie Fillings
The type of main dish usually determines the kind of dessert you should serve. Which of these desserts would you serve with the following main dishes? Spaghetti with meat sauce. Broiled fish and vegetables. Soup. Why?

sides serving it for dinner, you can have barbecued beef sandwiches for lunch one day and roast beef hash for dinner another day. While some people think of these foods as leftovers, the food service industry calls them make-overs. The difference is that a *leftover* is something that happens accidentally while a *make-over* is planned.

In planning make-overs, you might want to follow another procedure used by the food service industry—portion control. *Portion control* means serving a specified amount of food to each person. Restaurants use this to be sure everyone gets the same-size serving. It also helps them to control costs so they can stay in business.

Portion control used in the home can help you to plan more efficiently. People often buy a specific amount of food with plans to use part of it for another meal. At the first meal, they let everybody help themselves to all they want. Often there's not enough left for another meal and the plans for make-overs are ruined.



Knox Gelatine

In warm weather people often prefer chilled foods such as gelatin salads and pies.

Breakfast

Breakfast means to "break the fast." When you awake in the morning, you haven't had anything to eat for about ten or twelve hours. Your body needs energy and it needs amino acids to keep up the cell-building process. If you skip breakfast, your body still has to work but it cannot work as well as it should. By mid-morning, you may get nervous and develop a dragged-out, tired feeling.

Studies show that people who skip breakfast do less work and use up more energy for the same amount of work than those who eat breakfast. Generally, breakfast skippers move more slowly and have problems concentrating on school work or on the job.

To get you started right for the day, breakfast should supply you with at least one-third of your day's food. It should include one food from each of the four food groups. Breakfast is a good time to eat a food rich in vitamin C, just in case you forget it during the rest of the day. This way, you can be sure you get the daily supply of vitamin C your body needs.

To many people, breakfast means traditional foods such as juice, cereal and milk, eggs, bacon, toast, or pancakes. Breakfast, however, is not a matter of eating just certain foods—it's a matter of eating any nutritious food you enjoy. Those foods you enjoy eating at other meals are good for breakfast, too.

For a change of pace, try some of these breakfast combinations:

- Fruit or juice, tortillas, chili, milk.
- Cereal with fruit and ice cream and a glass of milk.
- Chitterlings, corn bread, collard greens, buttermilk.
- Fruit or juice, pizza or tacos, milk.



Mexican breakfast includes avocado, tortillas, refried beans, and Huevos Rancheros (eggs with spicy sauce).



Scottish breakfast of porridge, kippers (fish), eggs, fruit, scones, and marmalade.



Jewish breakfast of lox (smoked salmon) and eggs, bagels and cream cheese, fruit and pastry, prepared in a delicatessen.

Reprinted courtesy Chicago Tribune

Breakfast flavors from different ethnic groups . . .

- Whole orange and cheeseburger.
- Orange juice, fried beans, and a glass of milk.
- Orange juice, peanut butter sandwich, and a milk shake.
- Tomato soup and a cheese sandwich.

Perhaps you're responsible for getting your own breakfast in the morning. Do you help other family members with theirs? You might try this experiment. Decide the night before what you're going to have for breakfast. Keep it simple if you wish—orange juice or grapefruit, cereal, and milk. You might prefer juice, leftover meat, toast, and milk. Set the table with dishes and eating utensils. Put all unperishable foods such as cereal, sugar, and seasonings in one place so you won't have to look for them in the morning. Put all the perishable foods such as milk, fruit, and meat on one shelf in the refrigerator. With everything within easy reach, you'll have time to get a quick breakfast for everyone. If others do not get up at the same time you do, they can quickly prepare their own.



Kellogg Co.

Breakfast should include food from each of the Daily Food Groups, including a high-quality protein.

Lunch

Lunch should supply you with at least a third of your day's nutrients. Be sure the four food groups are represented. Here is a nutritious pattern to follow:

Main dish. It should include high-quality protein. You can have anything from a salad or soup to a hearty sandwich or roast meat. Portion sizes are usually smaller than those served at dinner.

Enriched or whole-grain bread.

Vegetable, cooked or raw.

Milk or other beverage. Since everyone needs milk, lunch is a good time to get a serving. Young men often enjoy two glasses of milk for lunch.

Fruit or simple dessert.

Lunch choices vary, depending on personal preference and the food available. People who are at home during the day and tend to snack may not feel like



United Dairy Industry Assoc.

Many people enjoy a simple lunch such as this hearty cheese soup, salad, and pumpernickel bread.

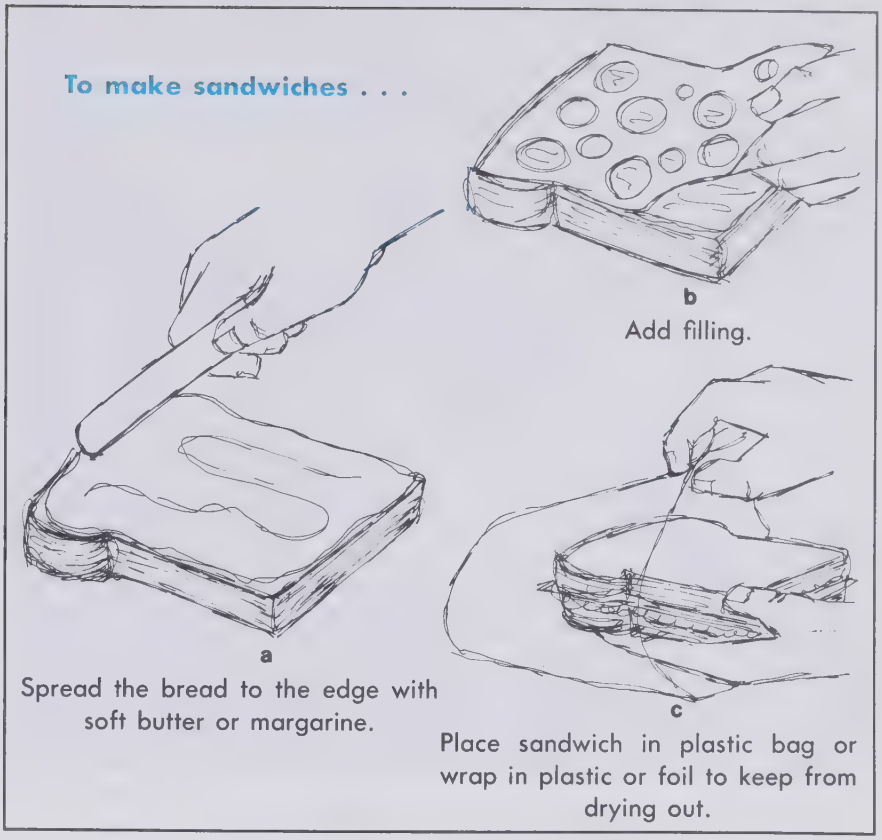
eating a large lunch. On the other hand, people who do heavy physical work need a hearty meal at lunch to supply them with extra energy.

Students can buy lunch at school, bring food from home, or eat at nearby snack shops. Food service in schools varies, depending on the policy of the school district. Some schools may have a very limited selection of basic menus for all students. Others offer a greater variety of foods. If you have a selection of food for lunch, follow the Daily Food Guide in making your choices.

If your school takes part in the National School Lunch Program, you can be sure the meals

are flavorful and nutritionally balanced.

Some students eat in nearby snack shops. Most of these shops have only a limited choice of foods, perhaps sandwiches and rich desserts. They do not offer enough variety so you can select a food from each of the four food groups. In that case, add the missing foods later as snacks—perhaps an apple or a can of fruit juice. You might also consider bringing your lunch from home.



PACKING YOUR LUNCH

Plastic containers and thermos bottles make it possible for you to carry many kinds of foods. For instance, you can use small, square plastic boxes for sandwiches. Thermos bottles come in different shapes and sizes so you can take hot foods such as soup or stew.

A lunch brought from home can be easily based on the Daily Food Guide. Include in your packaged lunch:

- A good source of protein—cold leftover meat such as pot roast, chicken, or turkey, or canned fish, cheese, or hard-boiled eggs.
- Whole-grain or enriched bread.
- Vegetable. Choose one high in vitamin A or C, such as carrot strips, tomatoes, green pepper, or raw cabbage.
- Fruit. Any fresh fruit in season can usually be packed in a lunch. Canned or frozen fruits can be carried in plastic containers with lids.
- Soup. While soup is not necessary, in cold weather it can provide a psychological lift. Take a light soup such as broth, just to warm you up, or a hearty meat-vegetable soup that provides proteins.
- Milk. Usually you can purchase milk in school.
- If you need more food, add cookies, pie, or cake.

Some lunch combinations might be:

- Hot beans in a thermos, tortillas, green peppers, banana, milk.
- Cold fried chicken, bread or rolls, carrots, apple, milk.
- Sandwich with leftover meat, raw turnip, orange, milk.

Here are some hints to follow when packing a lunch:

- Avoid taking highly perishable foods such as salads with mayonnaise, creamed foods, and over-ripe fruits and vegetables. A few hours at room temperature can cause harmful bacteria to grow and make these foods unsafe to eat.
- When making sandwiches, spread the bread to the edge with soft butter or margarine. This keeps the filling from



Campbell Soup Co.

Canned soups and assorted foods for sandwiches can easily be made into nutritious, satisfying meals.

soaking into the bread. Wrap sandwiches in plastic or foil to keep bread from drying out.

- If you have a freezer, make sandwiches ahead of time and freeze them. Do not freeze sandwiches containing eggs, mayonnaise, jelly, or uncooked vegetables. These foods do not freeze well in sandwiches. Wrap the sandwiches individually in foil or plastic and label. Put them in a plastic or cardboard box to keep them from being squashed by other foods in the freezer. Generally frozen sandwiches thaw in about three or four hours.
- If you do not have a freezer, make the sandwiches in the morning. Be sure the ingredients are well chilled.
- To pack hot foods in a thermos: Heat the food at the last minute. Preheat the thermos by filling it with very hot water and letting it remain for a few minutes. Pour hot water out of the thermos and fill immediately with hot food. Put the cover on immediately.
- One-serving cans of fruit or vegetable juices are excellent for packed lunches. Be sure to get the cans with easy-to-open lids.
- Make the lunch as attractive as possible. If you're packing a lunch for someone else, add a little surprise—perhaps a small plastic flower or a note of affection, just to show you care.

Dinner

Dinner is family time in many homes, especially on weekends. A typical pattern for dinner is:

Main dish. Should be a high-quality protein or a combination of high- and lower-quality proteins.

Vegetable, cooked.

Salad.

Bread, enriched or whole-grain.

Milk or other beverage.

Dessert.

This dinner pattern may be too much food if you snacked earlier in the day. For instance, if you stopped for pizza after school, you probably would not feel like eating a full dinner. However, to round out the Daily Food Guide, you might just eat the vegetable, salad, and beverage, and perhaps a light dessert such as fruit.

While dinner for the entire family is an ideal arrangement, on weekdays family members often eat dinner whenever they can. As discussed earlier in the chapter, this means individual family members are responsible for getting their own meal. Here, again, consider what you have eaten for the day. Which of the foods from the Daily Food Guide are you still lacking?

Dinner is a good time to supply them.

Do all of the adults in your family work? If so, help out by planning meals that can be easily prepared by individuals. Suggest foods to be kept in the refrigerator and cupboard for "make-your-own" dinners. Here are some ideas:

- Canned fish—tuna, salmon, sardines, and herring.
- Cheese.
- Eggs.
- Canned soups.
- Fruits and vegetables.
- Cold leftovers such as chicken, turkey, meat loaf.
- Leftovers that can be reheated quickly, such as stew and chili.
- Cereal.
- Milk.
- Bread.

If you have a large freezer, you can prepare meals ahead of time and freeze them. For instance, when making stew, it's easy to double the recipe and freeze the unused portion for later. The same applies to most foods. This gives a supply of nutritious food for those days when there just isn't time to prepare a meal.

Snacks

If snacks are an important part of your life, they should be planned as carefully as other meals and should fit into your daily food pattern.

If you have a snack of tacos after school, a complete dinner would probably be too much for you. Round out the Daily Food Guide with vegetable, milk, and dessert. Suppose, however, that dinner is to be an important family event. You might want to forego a large snack. Instead, have a glass of skim milk or fruit juice so you can eat a full meal in the evening.

If you enjoy crisp textures, snack on crisp fruits, vegetables, nuts, or popcorn. If you prefer rich foods, choose bananas, cheese, or avocados. Fruits such as apples, oranges, papayas, and mangoes can give you the sweet flavor you enjoy.

Generally, wherever you eat, you can find a nutritious food for a snack. Many vending machines and snack bars sell fruit juice, popcorn, or ice cream—all nutritious snacks.

If you are giving a party, you can choose from a wide assortment of nutritious snacks. These foods are not only flavorful but they are also low in calories. For dunking in dips, use fresh vegetables and fruits such as pepper strips, apple wedges, pineapple sticks, cherries, radishes, and celery, turnip, or carrot sticks.

Cubes of cheese wrapped in lettuce, hard-cooked eggs, nuts, and popcorn also make delicious party snacks. Fresh fruits, cheese, and nuts are an elegant combination. In fact, for centuries gourmets and the finest restaurants have served these foods for snacks and desserts.

Let's Explore and Report

- Review the day's food record you kept in Chapter 5. What kinds of snacks did you select? Were they from the Daily Food Guide or were they empty calories? If they were empty calories, why did you select them? What nutritious foods can you select in their place?
- Refer to the sample worksheet on page 108. Convert the amounts of food eaten to metric measures.
- Plan a party for your friends, serving nutritious snacks.
- Review the two food plans you made up in the preceding section, one for a 17-year-old male and one for a family of five. How do the meals meet the characteristics for flavor and eye appeal discussed in the last part of the chapter? What changes would you make in your original plans to make the meals both nutritious and more appealing?
- Collect pictures illustrating well-balanced meals. How does each food fit into the Daily Food Guide? How do the meals rate as far as flavor, texture, and eye appeal are concerned?

What Would YOU Do?

- You would like to help your family select more nutritious meals and to explain to them why good nutrition is important. You also want to explain how the Daily Food Guide and nutrition labeling can help them in their food selections.



Chapter 7

Controlling Your Weight

To help you to . . .

- Understand why excess weight is a health hazard.
- Identify the reasons people have weight problems.
- Decide on the best weight for you.
- Lose weight if you are overweight.
- Gain weight if you are underweight.
- Keep your weight at a desirable level.

Which of these statements applies to you?

"I know I'm overweight but the diets I've tried don't seem to work."

"I'm too thin. I sure would like to gain a few pounds."

"My weight is just right and I want to keep it that way!"

If you think your body shape needs improving, now is the time to do something about it. Even if your weight is just right for you, take steps now to make sure it stays that way.

Florida Dept. of Citrus

Low-calorie foods such as fruits, vegetables, and seafood can help you to control your weight.

WHAT IS YOUR BEST WEIGHT?

Look for these terms
height-weight table
pinch test

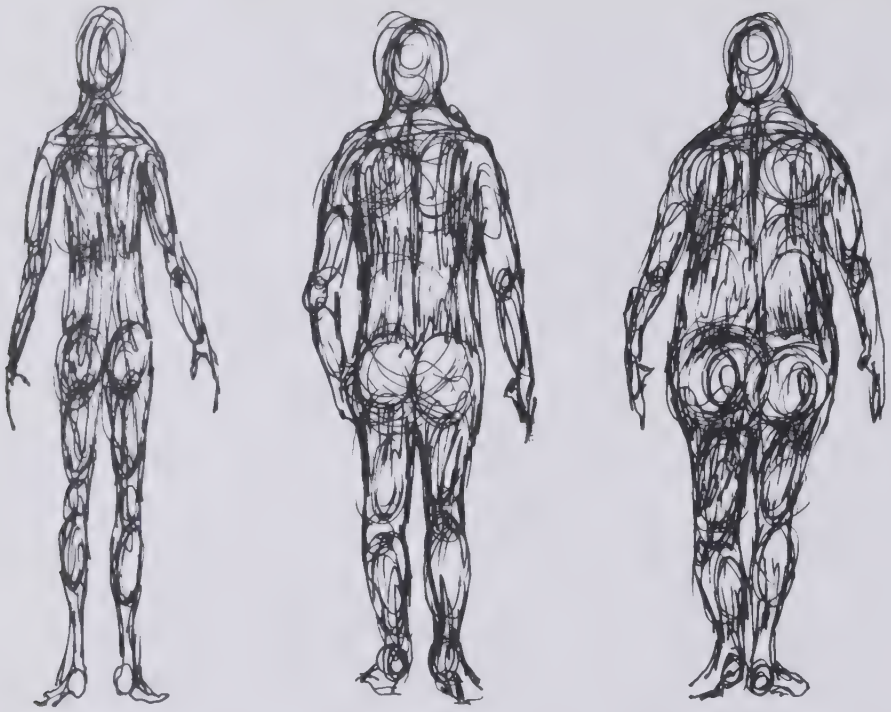
Different cultures have their own ideas of the best body weight. In some areas of the world, fat women are considered beautiful. Parents fatten young daughters, hoping they will be attractive enough to marry readily into well-to-do families. Some cultures consider a large physical body a sign of financial success.

In most English-speaking countries, the ideal body image is tall, slender, and sleek. Advertisements, movies, and fashion all promote the slim, trim look in both men and women. While this may be the American ideal, it is an impossible goal for many.

People come in all sorts of body shapes and sizes—tall, short, frail, large-boned, or muscular. Most do not fall neatly into just one category. A girl may have narrow shoulders, a small bustline, and large rounded hips. A man may be tall and frail-looking; another may be short and stocky.

Since you inherited your body size and shape from your parents, you cannot change the basic bone structure. However, whether you are short or tall, small-boned or large, you can still look your best by keeping your weight at a desirable level.

How do you know what weight level is right for you? Several tested methods are available.



Ectomorph Mesomorph Endomorph

Scientists have classified body shapes into three basic types—ectomorph, endomorph, and mesomorph. The *ectomorph* has a slender, angular body with fragile lines. The *endomorph* has pleasantly rounded lines and tends to be plump. The *mesomorph* has a muscular build, with either endomorph or ectomorph lines.

How Much Do You Weigh?

Height-weight tables, developed by health experts, give a weight range for different heights. Weights are based on a small, medium, or large body frame. See table on page 125. What size do you think your body frame is?

These tables can give you a general idea of your normal weight, but they have a drawback. Because there are no standards for each type of body frame, it is difficult to decide what category a person fits. Many people often misjudge and consider themselves larger than they really are. As a result, they use the higher weight figure in the range as their normal weight level.

Some charts are based on your weight with clothing while others give weight without clothing. Check the chart to see what it states.

Since your body weight changes from day to day and hour to hour, don't weigh yourself every day. Instead, weigh yourself once a week, preferably on the same day and at the same time. This will give you a better comparison of your weight from week to week.



The pinch test measures the amount of fat stored under the skin.

How Much Fat Do You Have?

Some health experts feel that the amount of body fat is a better indicator of weight level than actual body weight. They use the *pinch test* to measure the amount of fat stored under the skin.

The triceps, the muscle at the back of the upper arm halfway between the elbow and shoulder, gives the best results on a pinch test. Other good spots are the waist, the back of the calf and, for men, the midchest area.

To measure your fat thickness, gently pinch your skin at the back of your upper arm with the thumb and forefinger of your

WEIGHT TABLE FOR ADULTS

Height without Shoes	Weight without Clothing		
	Small Frame	Average Frame	Large Frame
Men			
	Pounds	*Pounds*	*Pounds*
5′4″	122	133	145
5′5″	126	137	149
5′6″	130	142	155
5′7″	134	147	161
5′8″	139	151	166
5′9″	143	155	170
5′10″	147	159	174
5′11″	150	163	178
6′	154	167	183
6′1″	158	171	188
6′2″	162	175	192
6′3″	165	178	195
Women			
5′	100	109	118
5′1″	104	112	121
5′2″	107	115	125
5′3″	110	118	128
5′4″	113	122	132
5′5″	116	125	135
5′6″	120	129	139
5′7″	123	132	142
5′8″	126	136	146
5′9″	130	140	151
5′10″	133	144	156
5′11″	137	148	161
6′	141	152	166

(USDA, 1974)

other hand. Be careful not to bruise yourself. One layer of fat and skin on a person of normal weight usually measures between 0.6 and 1.3 cm [¼″ and ½″]. Since you get a double fold when you pinch the skin together, the thickness should be from 1.3 to 2.5 cm [½″ to 1″]. If it measures more than that, it is a sign of overweight. If it is less than that, it can mean you are underweight.

Here, again, body structure must be considered. Some people may be at their right weight level but have unusually thin or heavy upper arms. In that case, the pinch-test method would not be a reliable one to use.

How Do You Look?

Probably the best clue to your weight is your appearance.



Your appearance is probably your best clue to your weight. How do you look in a three-way mirror? Do you have bulges or are you too skinny?

Look at your body in a full-length mirror in a strong light. Do you have bulges or rolls of fat? Are you skinny? If your answer is yes, you have a weight problem.

WHAT CAUSES WEIGHT PROBLEMS?

Your weight is a matter of energy balance. The food you eat supplies energy or calories. If you are healthy and eat the same number of calories as you use, your weight should remain the same. If you use more calories than you take in, you lose weight. However, if you eat more calories than you can use, you gain weight.

It doesn't take much to begin to gain weight. Keep in mind 0.454 kg [one pound] of body fat has 3,500 calories. Note the chart of calories used for activities on this page. Suppose it takes you an hour and 170 calories to walk to and from school every day. Then a friend offers you a daily ride. You now use only 80 calories in the hour just before and after school. This means you will need 90 calories less a day. If you continue eating the same, you can gain about 2.7 or 3.2 kg [six or seven pounds] a year just by this slight decrease in your activity.

If you are beginning to develop a weight problem, you

CALORIES USED FOR ACTIVITIES

(USDA)

Type of Activity	Calories per hour
Sedentary	80 to 100
Activities done while sitting, with little or no arm movement. Reading; writing; eating; watching television or movies; sewing; playing cards; writing at a desk.	
Light	110 to 160
Activities done while standing that require some arm movement, and strenuous activities done while sitting. Preparing food; doing dishes; dusting; handwashing small articles of clothing; ironing; walking slowly; personal care; rapid typing; filing in an office.	
Moderate	170 to 240
Activities done while standing that require moderate arm movement and activities done while sitting that require vigorous arm movement. Making beds, mopping, and scrubbing; sweeping; light polishing and waxing; laundering by machine; light gardening and carpentry work; walking moderately fast.	
Vigorous	250 to 350
Heavy scrubbing and waxing; handwashing large articles of clothing; hanging out clothes; walking fast; bowling; golfing; gardening.	
Strenuous	350 or more
Swimming; tennis; running; bicycling; dancing; skiing; football.	

may be inclined to ignore it. Keep in mind, however, that it's much easier to handle these problems early rather than after they become serious. You can lose 2.3 kg [five pounds] more quickly than you can 6.8 kg [fifteen pounds].

Let's Explore and Report

- Discuss the problems many people may have in trying to conform to the American ideal body image of tall, slender, and trim.
- Make a list of your favorite daily activities and the length of time you do each. From the chart on page 126, estimate the number of calories you use.

IF YOU ARE OVERWEIGHT

Look for these terms

amphetamines
diet club
high-calorie foods
low-calorie foods
"miracle" diets
obese
seesaw dieting

People who are ten percent above normal weight are considered *overweight*. Those 20 percent above normal weight are considered *obese*. A person with more than 2.5 cm [one-inch] thickness on the pinch test is considered overweight.

Health experts estimate that a little over one-third of the people in the United States are overweight. More than half of these are obese.

What's Wrong with Being Fat?

The fatter a person is, the greater the danger to health. Life insurance studies show overweight people die younger than people of normal weight. They are more likely to have diseases such as cancer, diabetes, heart ailments, and high blood pressure. Insurance companies consider fat people such a risk they charge them more. Some companies even lower their rates for those who lose weight and keep it off.

Excess weight puts a strain on bones, muscles, and body organs. Overweight people need extra effort to breathe and walk and to move the excess fat around. They perspire heavily because the thick layer of fat insulates the body, keeping excess body heat in.

Besides being a health hazard, excess weight creates other problems. Social pressures can make fat people extremely uncomfortable when out in public. Fashions, for instance, are designed with the slender in mind. This makes shopping for the latest styles somewhat difficult. A trim, buttoned sports jacket may strain over the round abdomen of an overweight man. A fashionable sleeveless dress can reveal a girl's flabby arms.

Many jobs involve meeting the public. As a result, the personnel manager may give high priority to the employee's appearance and may not hire anyone who is greatly overweight.

Why Are People Overweight?

In a few instances, overweight may be caused by a health problem that needs medical attention. Most fat people, though, got that way by overeating—too much of the wrong kind of food for the amount of physical activity.

Why do people overeat? For many reasons, both social and emotional.

Modern living encourages people to eat too much. Food advertisements on radio and television, and in magazines and newspapers stimulate appetites. Grocery stores have an overabundant selection of food. Restaurants offer rich entrees and desserts that customers find hard to resist. No matter where you go, food is usually available—snack bars and vendors at sports events, refreshments at meetings, and vending machines in many public places.

Hospitality generally means food—people eat when visiting and in turn keep a supply of snacks on hand for entertaining guests. Thus snacks are readily available in most homes to add more calories to the diet.

For many, eating satisfies a need for pleasure. They love to prepare food, eat it, and enjoy trying new combinations they



Modern living encourages eating between meals. No matter where you go, snacks are usually available.

can share with friends. For others, food is a symbol of financial security and social status, so they entertain lavishly. In many families, rich, high-calorie foods are the custom. Often, members of such families tend to be overweight.

People frequently overeat to comfort their feelings of anxiety or depression. Some use food as a substitute for love and security. For others, food relieves stress and tension, loneliness and boredom. People can easily put on many extra kilograms [pounds] eating cake and candy to cheer themselves up.

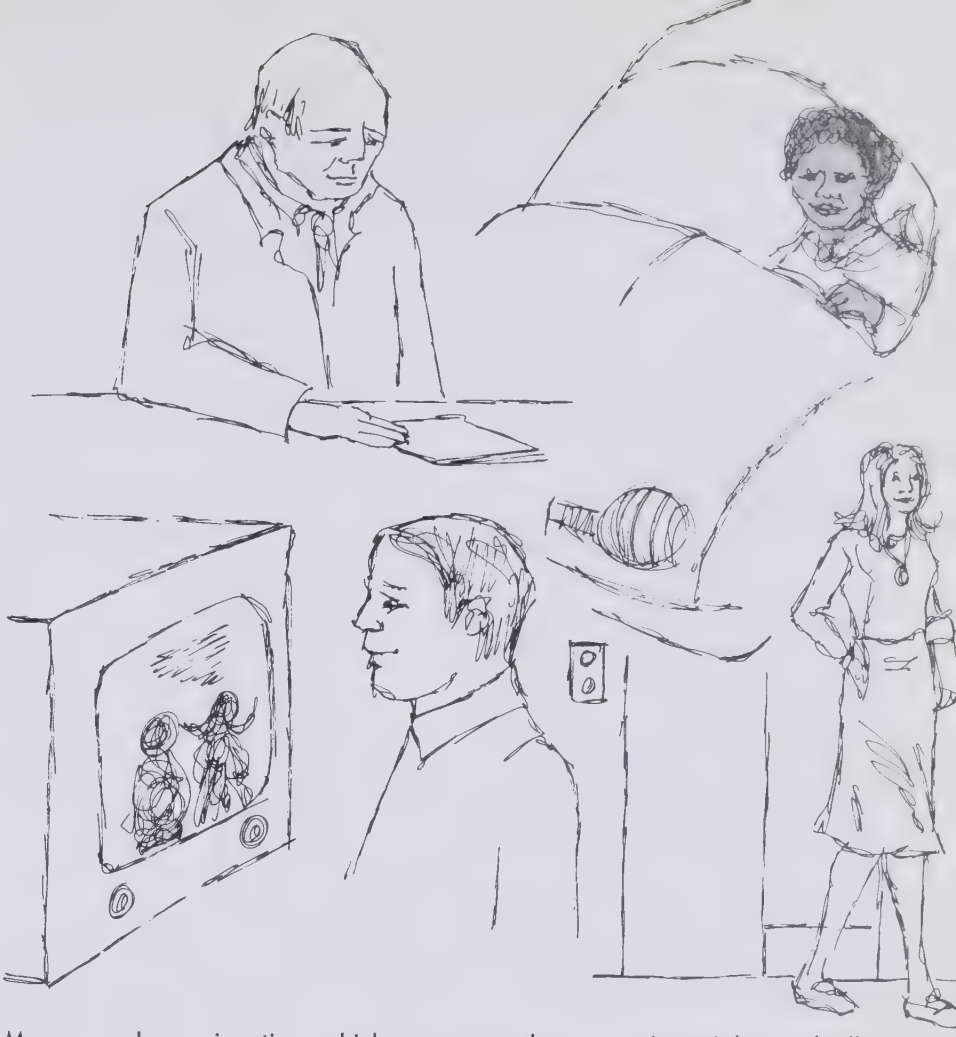
Eating for emotional reasons can sometimes create a vicious circle. People overeat and become fat. They find it difficult to lose weight and begin to feel unwanted and alone. This makes them eat even more and gain more weight.

A job can often cause people to gain weight. Many young adults graduate from an active school life and go to work at a

sedentary job. Unless they change their eating habits or have some daily exercise, they can usually expect to gain weight over a period of time.

Many people must eat meals away from home and often have only a limited choice of hearty sandwiches and desserts. Those who work odd hours may want to eat with their families as well as on the job. Thus they add an extra meal or two to their daily schedule.

Many people gain weight for the very simple reason that they do not understand how fattening some foods can be. They are not aware of the high number of calories in some of their favorite foods such as soft drinks, french fries, candy, pies, cakes, sauces, and gravies.



Many people are inactive, which can cause them to gain weight gradually over a period of time.

How Can You Lose Weight?

Your first step is to make up your mind to lose weight. This is the most important step—you must *want* to lose weight. Think of your health, your appearance, and your own feelings in social situations. Everyone has moments of weakness, so your determination to lose will help you stay on your diet. It will help you bypass tempting snacks and desserts.

SEE YOUR PHYSICIAN

Once you decide to lose weight, get medical advice from your physician or a clinic. Some weight problems can be caused by health disorders that will show up on a physical examination. If your health is good, you and your physician can discuss the best weight level for you.

Before you visit your physician, keep a record for two or three days of the food you eat and how much. Also write down *where* you eat. This is extremely important, as will be discussed a little later. Figure out the number of calories, using the table, *Nutrients in Food,* Appendix G. This will help the physician determine how many calories you should eat to lose weight.

You might also discuss with the physician the reasons you are overweight. If emotional problems are causing you to gain weight, your physician can usually advise you how to handle them or recommend someone you can turn to for advice.

You will be given a diet to follow, one that usually involves counting calories. Why are calories so important? Remember,

1,200 CALORIE DIET

	Calories	Total
Breakfast:		
120 mℓ [½ cup] orange juice	55	
Cereal	110	
1 slice buttered toast	110	
Skim milk	90	365
Snack: Hot bouillon	5	5
Lunch:		
Chef's salad with ham and chicken strips	125	
1 slice whole wheat bread	65	
Butter or margarine	35	
Buttermilk	90	315
Snack: Apple	80	80
Dinner:		
Broiled chicken, 85 g [3 oz.]	115	
Grits, 180 mℓ [¾ cup]	95	
Collard greens	25	
Buttermilk	90	
120 mℓ [½ cup] canned peaches, packed in water	40	365
Snack: Skim milk	90	90
		1,220

0.454 kg [one pound] of body fat equals 3,500 calories. To lose about half a kilogram [a pound] a week, you need to cut down by 3,500 calories, or 500 a day. To lose about a kilogram [two pounds] a week, you need to cut down by 1,000 calories a day. Health experts recommend that you lose not more than 0.7 to 0.9 kg [1½ to 2 pounds] a week. Do not try to lose more than that. It takes your body time to adjust to weight loss or gain.

The diet you receive will outline the types of foods and amounts you may eat. Select low-calorie items from the Daily Food Guide, making sure you have a variety every day. This will keep the diet from getting monotonous and will also give your body all the nutrients it needs. The sample menu on this page totals a little over 1,200 calories.

If you are put on a very low-calorie diet, your physician may recommend that you take vitamin and mineral supplements so you get the nutrients you need daily. Be sure you take them as directed.

SET A GOAL

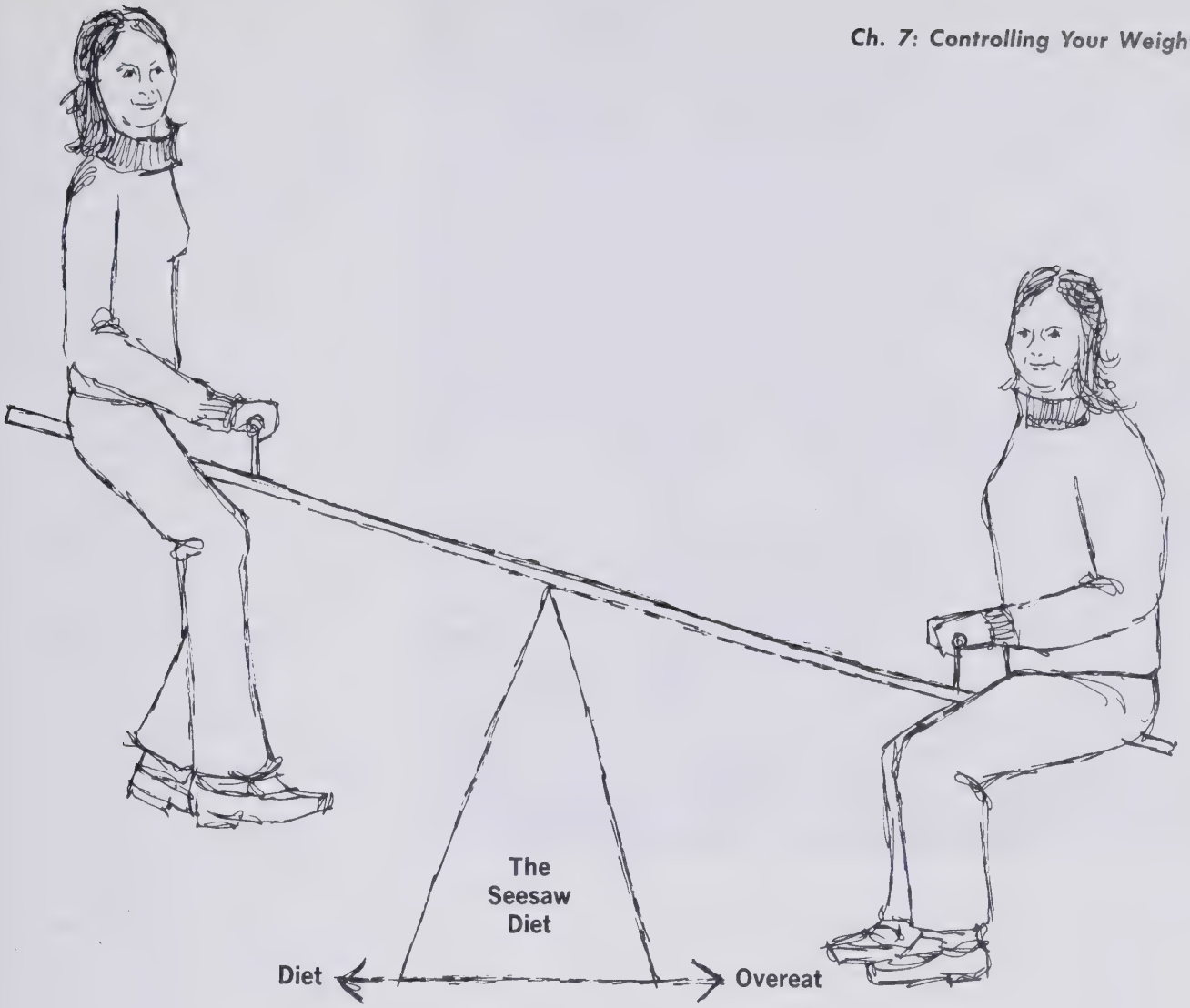
Determine the best weight for your age, sex, body build, and activity level. Then set your diet goal.

Your long-range goal may be to lose a specific number of kilograms [pounds] or centimeters [inches]. If you set short-range goals as well, you can get a feeling of accomplishment that will help you stick to your diet. Reward yourself with a small gift when you reach this short-term goal, but don't make the reward a high-calorie food. For instance, when you've lost the first 4.5 kg [ten pounds] or 2.5 cm [one inch] off the waistline, you might buy a special poster or record you've wanted for a long time.

CHANGE YOUR EATING HABITS

Nothing is more discouraging than dieting for weeks to lose weight and then regaining it all as soon as you go off the diet. Many people get into a routine of *seesaw dieting*. They diet strenuously, regain the weight they lost as soon as they stop dieting, and then start all over again. It becomes a way of life with them.

Every time you lose or gain weight, your body has to make severe adjustments. A cycle of



People often get into the habit of seesaw dieting. They lose weight on strict diets, stop dieting and regain all they lost, and then start dieting all over again. This type of dieting is a health hazard.

seesaw dieting can be hazardous to your health. It can cause thyroid problems, heart disease, and depression.

The secret of losing weight and keeping it off is to develop a new enjoyable way of eating. By changing your eating habits, you can establish an eating pattern that will help you to keep your weight at the best level for the rest of your life.

One way to change your eating habits is to find out *where* you do most of your overeating. As a rule, people do not overeat all the time, but only in certain situations. Earlier, it was suggested that when you make a record of the food you eat, you also make a note of where you eat. This will help you to realize under what conditions you are most likely to overeat. For instance, you may find that you snack on high-calorie foods only when you watch television



California Tree Fruit Agreement

Fresh fruit—a boon for dieters. It's low in calories and combines well with other foods to add variety to any diet.

or when you are with friends. How do you handle these situations so you can stay on your diet?

Make up your mind that for the duration of the diet, you will eat only in the dining area in your home—whether it's in the kitchen, family room, or dining room. What can you do if you are in the habit of stopping for high-calorie snacks after school with friends? Order a low-calorie item, such as a small salad or fruit juice. If these items do not appear on the menu, discuss your problem with the manager. Probably many other people eat there who would prefer low-calorie foods. Perhaps the manager can add fruit juice or some other low-calorie food to the menu selections.

CALORIES IN FOOD

When you begin your diet, count calories carefully for a while. You will soon notice that low-calorie foods have certain kinds of textures as compared with high-calorie foods. Once you become familiar with these characteristics, you can usually estimate the calories in most food. Try not to chain yourself to a calorie chart—it takes the fun out of dieting. However, once in a while it's a good idea to keep an accurate calorie count for a day, just to be sure you are staying within your limit.

To help you select the right foods without having to check a calorie chart all the time, keep the following characteristics in mind:

Low-calorie foods tend to be:

- Thin or watery, such as oranges, pears, grapefruit, or other fruit.
- Bulky but not fat, such as lean fish, meat and poultry.
- Coarse, with lots of fiber but no fat, such as celery and other greens and whole-grain breads and cereals.
- Watery-crisp, such as apples and carrots and other fruits and vegetables, and not greasy-crisp such as french fries, fried chicken, and potato chips.
- Puffed or airy, such as enriched cereals, but not greasy.

High-calorie foods tend to be:

- Thick, oily, or greasy-crisp, such as french fries or fried chicken.
- Slick, smooth, and thick, such as sauces, gravies, and milk shakes.

- Sweet or sticky, such as candy, cakes, pies, cookies, syrups, carbonated beverages.
- Compact or concentrated, such as jams or stuffings for poultry.

Not long after you start dieting, you will discover you no longer have the enormous appetite you once had. You might even insist that your stomach has shrunk. Scientists, however, have proved it is impossible for the stomach to shrink. Although it can distend when it is overloaded, as discussed in Chapter 3, it cannot shrink just because less food is eaten. What you have actually done is to develop a new habit of eating less food. Your stomach hasn't really shrunk—it just feels that way.

As you plan your new diet, you will probably be concerned about having to make food changes. Keep the best of your original diet and build around it. You may have to cut down on the portion sizes of some foods, but you do not have to give up all of your favorites. If you like tortillas and chili, make the servings *smaller* and add fresh vegetables and fruits to the meal. Of course, you may have to change your ways when it comes to sweets and rich desserts. You won't have to give them up completely—just eat small amounts and not as frequently. Remember, developing the right eating habits can help you lose weight and control it throughout your life.

Frequently, you will find it isn't the food itself that is extra-high in calories but what you add to it. For instance, how do you like potatoes served? Boiled—with parsley butter? Baked—with loads of sour cream? French fried? Take a look at what happens to the calories in a potato as you serve it in different ways.

One medium-size potato

	Calories
Baked, with only salt and pepper added	90
Baked, with 15 mℓ [one tablespoon] of sour cream, salt, and pepper, and chives	115
Baked, with 5 mℓ [one teaspoon] of butter or margarine and salt and pepper	125
Cut in strips and french fried	300
Sliced thin into potato chips and fried	575

A potato made into fried chips has more than six times as many calories as a plain baked one. This same principle holds true of other foods as well. Macaroni and spaghetti are not excessively high in calories, but they are usually served with rich sauces. Just 15 mℓ [one tablespoon] of salad or cooking oil added to any food also adds 125 calories. Perhaps fried chicken is your favorite. Instead of frying it, bake or broil it so that it has less fat. It will still have the same delicious flavor and crisp texture.

BE PHYSICALLY ACTIVE

Any increase in your activity can help you lose weight as you diet. Climb stairs instead of riding elevators, walk briskly or ride a bicycle instead of taking a bus or a car.

Try to set aside a period of time daily for exercises. You will find exercise improves muscle tone so your body doesn't become flabby as you lose weight. It can give you a greater feeling of well-being and may even help to relieve those tensions that cause overeating.

If possible, daily activity is better than just once-a-week exercising. It's also more enjoyable if it's in the form of a sport. However, if you are unable to take part in a sport, there are many calisthenics you can do in your home. You might discuss this with your physical education teacher to see what type of exercise is best for you.

Dieting is a good time to take up a new sport. It will give you a new interest, help you meet new friends, and help keep your mind off food.

STICK TO YOUR DIET

Think of your diet in terms of a 24-hour-day at a time. It will be easier to stay on it. If you worry over the number of weeks you will have to limit the food you eat, you might get discouraged and give up.



National Broiler Council

Broiled chicken, whether cooked over open coals or in a range, has the same crispy texture and flavor as fried chicken. However, it is lower in calories.

Some people can stay on a diet by themselves, but others need group support. If you need a helping hand in sticking to a diet, join a diet club. There are many kinds. Some groups get together just for moral support while others count your calories for you by giving you daily menu plans. In most cases, a fee is involved. Check with your physician to be sure the diet is a safe one.

No matter which club you join, do not expect noticeable results unless you are determined to stay on the diet. A club can provide you with a diet and give you encouragement, but it is up to you to *stay* on the diet and lose weight. No one can do it for you.

Have patience when you diet. As a rule, your weight loss will not show up immediately. Although your fat deposits are being used up, your body retains water because it takes time to adjust its water balance. Sometimes it takes as long as three weeks for the body to make the adjustment. If this happens to you, don't be discouraged. One day you will step on the scale and find you have suddenly lost a few kilograms [pounds]. Many people who are not aware of this get discouraged and stop dieting too soon.

If you still have not shown a weight loss after more than three weeks of dieting, check with your physician. It could be you need to reduce the number of calories a little more. You

might also need to become a little more active. On the other hand, it could also mean you are not being as careful as you should be in your food selections. An extra pat of butter, another cracker, or a few potato chips can make the difference between losing weight or not.

WHEN YOU EAT OUT

Staying on a diet when you eat out can be a problem. Most restaurants show little mercy for dieters. They feature high-calorie entrees and desserts. If they have a "dieter's special," it is usually a broiled hamburger with cottage cheese and sliced tomato. While a chef's salad is a common lunch entree, it is usually not offered for dinner.

Here are some suggestions to help you stick to your diet when you eat out.

- Drive-ins usually specialize in hearty sandwiches or breaded and fried foods—all high-calorie items. Some, however, offer salads and perhaps a diet plate. Select the one that has food you can eat without going off your diet.
- Plan ahead of time what you are going to eat. Then you will not have to look at the menu and be tempted to order high-calorie foods.
- Chicken, tuna, or shrimp salad may not be as low in calories as you think. Usually it is made with mayonnaise, which has 100 calories in 15 mℓ [1 tablespoon]. Since you do not know how much mayonnaise a serving contains, it would be better to order a food without these hidden calories. You might have a chef's salad, broiled chicken, or baked fish.
- Foods such as grapefruit, melon, and juices are usually listed as appetizers. Select the fruit as a dessert or order the juice instead of a soft drink as a beverage.
- Try foreign restaurants. Many Japanese and Chinese foods are prepared with very little fat added and with crisp, low-calorie vegetables.



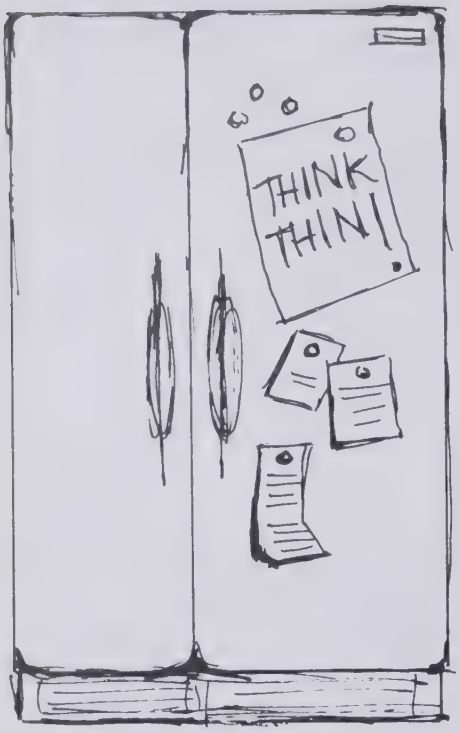
United Dairy Industry Assoc.

Attractive meals can make it easier for you to diet. Sliced vegetables and quartered hard-cooked eggs are a colorful accompaniment for cottage cheese.

DIET HINTS

Here are a few hints to help you stay on your diet and even make it fun to follow.

- Take small servings of food and don't even think about second helpings.
- Instead of a large dinner plate, use a smaller one—a luncheon or salad plate. It makes the food portions look larger.
- Do not skip meals. Every meal is important. If you skip, you may get so hungry you will snack and eat more food than you would have otherwise.



A sign such as this one on the refrigerator can help you stay on your diet.

• Some people have more success dieting with five small meals a day instead of three large ones.

• If you have a special occasion like a party, budget calories. Eat only very low-calorie foods during the day so you will have a few calories saved up for the special event later. Remember, though, you cannot save calories from one day and use them the next. If you do, you will rob your body of the nutrients it needs daily.

• Be sure to have a breakfast that includes protein so your body will have a good supply of amino acids.

• A diet should be a pleasure, not a chore. Select a variety of foods to avoid monotony.

• Eat slowly and chew food thoroughly. If you eat slowly, you get a sense of satisfaction from every bite. Also, you have less desire for second helpings.

• Snack-type foods are usually high in calories. For snacks, choose low-calorie foods such as fresh fruits and vegetables and bouillon.

• Learn to use herbs and spices to give different flavors to your favorite foods.

• Put a sign on the refrigerator such as, "Think Thin," or "Thin Is Beautiful." You might put up a picture of the ideal body you would like to have or a new clothing style you could wear if you lost some weight.

• Drink a large glass of water before meals. It helps fill the stomach so you won't feel like overeating.

• Some people like to keep a chart of their weight loss. If you do, do not weigh yourself more than once a week. You may find your weight going up and down because of water retention. This can be discouraging.

• Keep a chart of your body measurements from week to week. It will help you to "see" yourself getting thinner.

• Stretch your meals without adding calories. Use non-starch, low-calorie vegetables such as tomatoes, celery, green peppers, and mushrooms, and combine them with meat or poultry.

• Prepare diet gelatin and cut it into cubes. Serve it with fresh fruit in a sherbet or parfait glass for a low-calorie dessert or snack.

The Myth of "Miracle" Diets

You may be tempted to try one of the "miracle" ways of losing weight—pills, candies, or diets that promise quick weight losses. These methods usually develop into a seesaw diet pattern, as discussed earlier. You may lose the weight quickly, but when your old eating habits return so does the weight. Many of these diets are health hazards. They can do serious damage to your body because they lack nutrients you need every day.

Here are some of the "miracle" ways people use to try to lose weight.

Pills are among the most widely used diet aids. The most common one is amphetamine, also known as "speed." *Amphetamines* are stimulants which curb the appetite and help overcome depression that may cause overeating. Unless

Knox Gelatine

Combine unflavored gelatin with low-calorie foods and beverages to make flavorful salads and desserts.



used under strict physician's orders, however, they can also produce serious side effects. Some of these include high blood pressure, dryness of the mouth, and rapid heartbeat. Unrestricted use can lead to addiction or dependence on the drug.

Some diet pills, when analyzed by chemists, have been found to contain the following:

- Thyroid extract. This medication is often prescribed when the thyroid gland is not working normally. However, for people with normal thyroid glands, this substance can upset the workings of the hormone system.
- Cathartics (strong laxatives). These are often put in diet pills to speed food through the digestive system so all of the nutrients will not be absorbed and turned to fat. Strong laxatives, taken regularly, can rob your body of nutrients and upset the work of the intestines.
- Diuretics. These are drugs that remove water from the body. They are often prescribed for a person whose body retains abnormal amounts of water. Sometimes they are given to dieters so they can see a weight loss immediately. If taken when not needed, they can cause the body to lose potassium. The person may also become weak and develop nausea.
- Digitalis. Although intended originally for heart patients, the drug also curbs appetites. However, for a healthy person, it can be dangerous not only to the heart but to the kidneys as well.

Before you take any diet pills, check with your physician to be sure your health will not be harmed.

Diet candies usually contain sugar, which normally lowers the appetite if eaten just before a meal. They do not help you improve your eating habits to keep excess weight off permanently.

Formula diets can be made at home from a recipe or purchased ready-to-drink. They are not only monotonous but some can also cause severe constipation. Some are claimed to be "nutritionally balanced." However, they may not contain trace elements or those still-unidentified nutrients available in a variety of food.

A *high-fat diet* allows people to eat only foods high in fat and proteins, with little if any carbohydrates. This means the diet is high in saturated fats. Such a diet can be dangerous to health since it can cause ketosis, discussed on page 80. If a pregnant woman is on this diet, it can endanger the life of the unborn child. Health experts strongly warn people not to go on this type of a diet.

A *high-protein diet* includes unlimited amounts of certain lean meats, poultry, and fish that are broiled, boiled, or baked, as well as eggs and cottage cheese. The foods must be free of fat and gravy. No other dairy products or any carbohydrates are allowed. The dieter must drink at least eight glasses of water a day and take high doses of vitamin and mineral supplements. This diet, too, can cause ketosis, since few carbohydrates are eaten and the body must get its energy from fats and proteins. It is also an expensive diet, since protein foods are usually high in cost.

The *low-carbohydrate diet* calls for a drastic cut in carbohydrates. The dieter can eat any foods other than carbohydrates and usually must count calories. This diet can be dangerous to people who require more carbohydrates than do others. If they do not get enough carbohydrates, the blood sugar level falls, and may cause chronic fatigue. This diet, too, can cause ketosis.

One-food diets are based on eating only one food or combination of foods, such as rice, bananas and milk, seafood, vegetables and fruit, or yogurt. They are monotonous and do not even begin to provide all the nutrients the body needs every day.

Let's Explore and Report

- Clip advertisements for snacks from newspapers and magazines. Using the table, *Nutrients in Food,* Appendix G, determine the number of calories in these snack foods. What other kinds of foods would

make flavorful snacks and yet give fewer calories?

- Obtain statistics showing the relationship between obesity and length of a life span.
- Using menus collected earlier, select a lunch and dinner based on a 1,200-calorie and 1,800-calorie a day diet.
- Bring to class newspaper and magazine articles on dieting.

IF YOU ARE UNDERWEIGHT

A height-weight chart, the pinch test, or your general appearance can tell you whether or not you are underweight. However, be sure to get medical advice before going on a weight-gaining program. Your lack of weight may be caused by a medical problem rather than your food habits.

Since the slim, trim look is considered the American ideal, underweight people are usually envied. If underweight people are in good health, a thin body should be of no concern. However, the person who is extremely underweight can have as many health problems as one who is overweight.

Underweight people may have poorly developed muscles and poor posture. They lack fat layers which means they have no reserve supply of energy and no insulation. Thus they tire easily and are more sensitive to cold temperatures. They may also be irritable and nervous.

Why Are People Underweight?

Being underweight has many causes. Frustration and tension can affect appetites. Some people react to these conditions by overeating. Others, however, lose their appetites instead and lose weight, too.

Some underweight people just may not feel like eating. Others may be so involved in many activities that they find little time to eat. In either case, they deprive their bodies of vital nutrients.

Occasionally, people are anxious not to become overweight so they diet excessively. Eventually they become underweight and poorly nourished. They fail to understand that they need a certain amount of body fat to stay healthy.

How Do You Gain Weight?

Since about a half kilogram [a pound] of body fat equals 3,500 calories, you would need to eat 7,000 more calories a week to gain about a kilogram [two pounds]. That's 1,000 calories more a day.

If you want to gain weight, be sure your food choices are from the Daily Food Guide. To add calories, select more foods or larger servings from each group. Choose the higher-calorie foods in each of the groups, then add some from the "Other Foods" group. Don't forget to eat fruits and vegetables for vitamins, minerals, and fiber. However, you can also indulge in high-calorie foods such as cream sauces and gravies, whole milk, and fried foods. Keep in mind, though, that sweet or high-fat foods can depress your appetite, so do not snack on them just before a regular meal.

Some people gain weight successfully by eating smaller meals more frequently, perhaps five or six a day. By using this method, they can eat more food than if they just ate three large meals a day.

You may recall that thiamin promotes a healthy appetite. Eating thiamin-rich food such as wheat germ regularly may stimulate your appetite. Mild exercise, such as a brisk walk, can also help improve the appetite.

People with poor appetites can eat only a limited amount of food during a day. Therefore it's a good idea to add highly concentrated sources of energy to regular foods. Use jellies, butter or margarine, mayonnaise, and sauces. A good way to get extra calories is to add dry milk solids or powdered skim milk to quick breads, mashed potatoes, meat loaf, gravies, sauces, milk desserts, and casseroles.

If your lack of weight is caused by reactions to pressures around you, perhaps you need assistance in learning to cope with these conditions. A physician, a reliable friend, or a family member may be able to help you adjust to your problems.



International Pewter Co.

To help keep your weight under control, serve low-calorie snacks such as fruit.

Roast turkey, stuffing, and gravy. Which foods would you select if you wanted to lose weight? To maintain your weight? Why?

National Turkey Federation



KEEPING YOUR RIGHT WEIGHT

Once you have reached your best weight level, make up your mind to keep it. Begin by experimenting with the number of calories you eat daily. Cut down calories or add them, as needed, to keep your weight where it should be.

Keep in mind that your new body size has a different basal metabolism rate (BMR). (Review Chapter 4.) If you've gained needed weight, you will need more calories just to keep your metabolism going. If you have lost, your smaller body needs fewer calories.

Remember, you cannot go back to all of your old eating habits and expect to stay at the same weight. As part of your diet, you probably learned to enjoy foods that are healthful and keep your body looking good. Keep these eating habits as part of your daily food pattern.

The key to keeping your weight is balance—balance the amount of food energy you eat by the amount of energy your body uses. The next time you reach for a candy bar or order apple pie à la mode, ask yourself, "Just what is my body going to do with all of this extra energy?"

Let's Explore and Report

- Refer to your daily food record, which you kept in Chapter 5. What changes would you have to make in your eating habits to keep your weight at the best level as a teenager? As a sedentary adult?
- Select a currently popular "miracle" diet. Evaluate it in relation to the body's nutrition needs.
- Select three basic foods, such as eggs, green vegetables, or turkey. Explain how these foods can be either low calorie or high calorie, depending on how they are prepared.
- Make up two posters, one showing texture characteristics for low-calorie and the other for high-calorie foods. Display in class.
- Clip illustrations from newspapers and magazines of men's and women's fashions that would be suitable for obese people. For thin people.
- Discuss the importance of getting medical advice before you try to lose or gain weight.
- Using the weight table on page 125, convert the heights and weights to meters and kilograms.

What Would YOU Do?

- A close friend has made up his mind to lose 9 kg [20 pounds] by going on a high-protein diet.



Remember—fresh fruits make delicious low-calorie snacks.



Chapter 8
Meeting Special Food Needs

To help you to . . .

- **Identify food needs for different stages of the life cycle.**
- **Understand how health problems can affect food needs.**

The Daily Food Guide can help people plan nutritious meals. Under certain circumstances, however, some people must pay special attention to their food selections.

People living alone and those on limited diets, such as vegetarians, need to make extra effort to be sure they are getting the proper nutrients. Food needs also change at different stages of the life cycle. Chronic diseases and illness can also affect a person's need for nutrients.

Look for these terms
lacto-vegetarian diet
ovo-lacto-vegetarian diet
singles
vegetarians

Polaroid
Three generations of one family—all the picture of health. Because they are all in different stages of the life cycle, their daily food needs vary.

TEENAGE ATHLETES

Teenage athletes are usually interested in special foods to give them more energy and strength. No "magic" foods can help a teenager become a better athlete. Because of the amount of energy they use, however, athletes need more food than the average teenager. A daily variety of foods, not just one special food, will help an athlete have a strong, healthy body.

Some coaches and players are convinced that athletes need more proteins than other teenagers do. They maintain meat and proteins give energy, strength, and power. Actually, however, physical activity increases the need for energy but not the need for proteins.

Often, athletes believe large amounts of steak improve their physical performance. Steak itself cannot help athletes perform better, but it may help them psychologically. If they believe steak is improving their athletic abilities, they probably will be better performers. Steak, however, is not the only good source of protein. In fact, as mentioned in Chapter 5, only about 30 percent of a steak is protein. Other good sources of protein include less expensive cuts of meat as well as fish, poultry, eggs, and milk.

If you are involved in school athletics, perhaps your coach has given you specific instructions for a sensible eating pattern to keep you at the peak of your strength and health. On the other hand, athletes are sometimes given vague instructions such as, "Eat sensibly." Some athletes are led to believe they must go on special training diets for good performance. Most physicians, however, recommend a well-balanced diet based on the Daily Food Guide. If athletes practice good nutrition and health habits throughout the year, they can maintain their weight and stay in good condition. Thus they will not have to go on any special "crash" program to get back into top physical condition.



Strenuous athletics increase the body's need for nutritious food.

Usually, meals should be eaten at least three hours before competing in any athletic event. This gives food time to digest and allows nutrients to be absorbed, but it is not enough time for hunger pangs to develop.

An athlete perspires heavily, losing water, and therefore needs large amounts of water or beverages to prevent heat exhaustion and heat stroke. This makes sure the body has an adequate amount of water to last throughout the game.

LIVING ALONE

Singles are adults who have not yet married or are widowed or divorced. Statistics show that about one of every three adults in the United States is single. Many live alone.

At some point in your life, you will probably be living alone, if only for a short time. Perhaps your family situation is such that even now you may occasionally find yourself living alone for brief periods.

Living alone calls for a tremendous adjustment to a new way of life. Two of the important changes are preparing food for just one person and eating alone. Many singles find it difficult to develop eating patterns that give good nutrition.

When you live alone, you may be tempted to adopt lazy eating habits and snack on empty calories. Keep in mind that poor nutrition may show up as fatigue, depression, lack of energy, frequent colds, and perhaps extra pounds.

Singles may not eat the right kind of food for several reasons. Perhaps they do not like to prepare food just for themselves or they may not enjoy eating alone. Loneliness is an emotion that can curb some people's appetites. For others, loneliness leads to snacking and irregular eating habits. Also, many singles have such busy schedules they frequently forget, or do not take time, to eat properly.

When singles first begin to live alone, they may enjoy eating out. This routine can become monotonous. Most soon have a desire to prepare at least a few meals a week at home.

Planning and preparing food for one person can be challeng-



California Dry Bean Advisory Board

People who live alone may prefer simple, easy-to-make meals such as broiled hamburger, canned chili beans, crisp fresh vegetables, and milk.

ing. Generally, single people will find it to their advantage to buy food in small quantities. Then they will not be bored by having to eat the same food for days at a time.

A large economy-size package of cereal may be a bargain for a family. For a single person, however, it may mean eating the same breakfast for weeks. A package of individual-size boxes of assorted cereal may cost more, but in the long run it is a better choice. It gives a daily variety of breakfasts to choose from. Canned fruits, vegetables, and juices come in small cans, allowing a wide selection from day to day.

An assortment of fresh fruits and vegetables makes nutritious snacks. Many grocery stores offer special packages of fruit combinations. A package might contain an apple, an orange, a pear, a banana, and a bunch of grapes—enough for a few days' enjoyment.

Generally, the guidelines discussed in Chapter 6 for breakfast and lunch can be easily applied to singles. For dinner, however, single people might want to concentrate on foods that are easy to prepare, such as broiled meat, fish, or poultry.

Perhaps some favorite recipes require long cooking and give



International Pewter Co.

Even if you eat alone, give yourself a treat. Make your table settings as attractive as possible.

six or eight servings. If you have a freezer, turn these into frozen dinners. Prepare the recipe on a weekend when you have time, divide it into individual servings, and freeze.

If you are eating alone, make your meals as attractive as possible so you will enjoy them. While you eat, play your favorite records or read a book or a magazine. Any of these can help to take your mind off your loneliness.

Invite a friend to share your dinner. If you are on a tight budget, suggest a potluck arrangement. Your friend can prepare and bring part of the meal—perhaps a salad and dessert.

Many men and women who live alone enjoy cooking so much they become experts. They are proud of their achievements and enjoy sharing their culinary skills with friends.

VEGETARIANS

Vegetarians are people who eat only vegetables and other plant foods. There are three types of vegetarian diets:

- *Pure or strict vegetarians* eat only fruits, vegetables, and grains. They use no animal foods such as meat, poultry, fish, eggs, and dairy products.
- *Lacto-vegetarians* use dairy products in addition to plant foods. They do not eat eggs, meat, poultry, and fish.
- *Ovo-lacto-vegetarians* eat eggs and dairy products in addition to plant foods. They do not eat meat, poultry, and fish.

Why do people become vegetarians? Some do not approve of killing animals. Buddhists, for instance, consider the act of killing an animal murder. Other people avoid meats as an act of self-discipline. Some act out of fear, believing meat products are harmful.

Vegetarian diets can be nutritious if milk and eggs are included. Studies show that Seventh-Day Adventists, who are ovo-lacto vegetarians, have exceptionally good health compared to the rest of the population in the United States.

Strict vegetarian diets which do not include milk or eggs can be dangerous because they offer a limited food selection. People on these diets are likely to be

short of many major nutrients, especially those found only in animal foods. These include:

- *Vitamin B_{12}*: This vitamin is found only in animal foods—meat, fish, eggs, and dairy products.
- *Calcium:* Unless some form of milk is used, vegetarians may find it difficult to get enough calcium. Vegetable sources of calcium must be used daily. Children, and pregnant and nursing women have great calcium needs which cannot be met just by eating green vegetables. If milk is not included, calcium supplements should be used.
- *Vitamin D:* If strict vegetarians do not get enough sunlight to manufacture vitamin D, they may develop a serious shortage. If they use fortified cereals, they may have no problems.
- *Riboflavin:* If milk and meat are not eaten, a serious shortage of riboflavin may develop. If vegetables and whole-grain and enriched breads and cereals are eaten, some riboflavin will be available. Eventually, however, a serious deficiency may occur.
- *Protein:* If milk is not used, getting enough of the right kinds of proteins may be a problem, especially for children. Vegetable proteins must be combined carefully so all the amino acids are present at each meal. A rough guide is to serve legumes at the same meal with cereals. Some combinations are beans with corn, beans with rice, and peanuts with wheat.

Let's Explore and Report

- Look through a grocery store and list the types of foods packaged in small quantities convenient for single people to use.
- Plan a week's menu for a young man who works in an office. He eats breakfast at home, has lunch in the company cafeteria, and likes to cook his dinners at home. He has a tendency to gain weight, so he has to be careful of the number of calories he eats. He usually has about 2,700 calories a day.

FOOD NEEDS AND THE LIFE CYCLE

Look for these terms
breast-feeding
colostrum
obstetrician
pediatrician
weaned

As people mature through their life cycle, their food needs change. At certain times in their lives they may need more food than at other times.

Pregnant Women

During the nine months of pregnancy, an unborn baby depends entirely on its mother for its nutrition needs.

During the first month, the nervous system and brain cells begin to form. Heart cells also begin to form and beat. The unborn human needs proteins, vitamins, and iron to make cells and carry oxygen. It needs glucose to supply energy for the brain, and calcium to help the heart cells beat.

Often, a woman may not be aware of being pregnant during the first month or two. This means she may not be eating properly to give the new life the nourishment it needs in its early stages. This is one of the reasons young girls should develop good eating habits and continue them into their adult life. When they become pregnant, they can be sure of supplying all of the nutrients needed during those first few months.

Of course, good nutrition is important throughout the entire nine-month period. As soon as a woman discovers she is pregnant, her obstetrician will recommend the foods she is to eat and how much. An *obstetrician* is a physician who specializes in caring for pregnant women and delivering babies.

Scientific evidence shows that many health problems during pregnancy are related to poor nutrition. Not eating the right kinds of food in the right amounts can also do permanent harm to the unborn baby. According to recent studies, babies born to women with poor nutrition weigh less than other babies do. They run a greater risk of developing health problems during their first year.



FAO

Women in Dahomey, Africa, learn the importance of good nutrition to the health of the unborn child.

The brain is the first organ of the baby's body to reach full size. Therefore poor nutrition during pregnancy can affect the growth of a baby's brain. Babies born of poorly nourished mothers generally have fewer brain cells than do other babies.

Some women crave certain foods during pregnancy, such as pickles and ice cream. If the foods are nourishing, there is no reason not to eat them in moderate amounts. If some of the cravings seem unreasonable, it is best to check with the obstetrician.

Nursing Women

According to many health experts, breast-feeding a baby is natural and beneficial to both child and mother. Human milk is designed for the human infant. If problems occur, however, the physician will determine whether to recommend a formula or continue breast-feeding.

During the first few days of nursing, the baby feeds on *colostrum,* a creamy, yellow fluid in the breast. It is rich in proteins and minerals and helps protect the baby against infection. In a few days, the mother's milk supply begins.

The nursing mother needs extra nutrients. She must eat enough for her own normal body needs as well as for the baby's milk. If she does not get enough of the right foods, she may not be able to produce enough milk. In addition, the milk probably will not have all the nutrients it should to keep the baby healthy.

The physician will recommend the foods and amounts the mother should have to produce a sufficient amount of

high-quality milk. Usually, she needs extra amounts of proteins, vitamins A and B, calcium, and fluids. Milk is especially important since it provides the calcium the baby needs for bone and tooth growth. A nursing mother should drink at least four or more glasses of milk a day.

As a rule, a nursing mother can eat any nutritious food she wants. However, strong flavors such as garlic or onion may show up in the milk. These will not harm the baby and probably will be unnoticed. If certain foods the mother eats upset the baby, she should check with her physician.

After a period of time, the child can begin to eat strained food. When the mother stops nursing her baby, the child is said to be *weaned* from the breast. Then the mother's breasts gradually stop producing milk.

Infants and Young Children

Many infants are bottle-fed on a formula prescribed by the physician. Most formulas are made of cow's milk with added carbohydrates, vitamins, and minerals. Commercially prepared formulas are available. Formulas may also be made at home from a doctor's prescription.

Some mothers feed their infants sugar water, a practice that causes poor nutrition. Since the sugar water fills its stomach, the baby has little appetite for nutritious food. The baby may also develop a craving for sweets that will follow it throughout life.

There is no hard and fast rule as to when infants may begin to eat strained or pureed solid food. The timing is usually up to the pediatrician, who will also recommend the kind of food to give. A *pediatrician* is a doctor who specializes in caring for babies and young children.

Baby foods may be purchased commercially. However, foods that the family eats—fruits, vegetables, meat, cereals—may be pureed at home with a blender and fed to the baby.

Strained foods are generally followed by easily chewed foods. These include fruits, vegetables, meat, fish, poultry, eggs, cheese, and macaroni. They should be cut in small pieces so the child can eat them with the fingers or from a spoon. A baby can have almost everything the family eats that is easy to chew.

Desserts should be simple—fruit, tapioca, gelatin or cornstarch puddings. Enriched or whole-grain bread can include dry, hard toast or zweiback, a commercially made toasted bread. Since babies are beginning to develop teeth, hard breads make their gums feel good.

Youngsters need foods from the Daily Food Guide, but in smaller amounts than adults do. Milk is the only exception—children should have two or more cups of milk a day.

As children get older, they can join in eating family meals, but in smaller portions. Children's appetites vary from day to day. Their growth rate, activities, and general attitude determine how much they can eat. Many physicians recommend that children are good judges of *how much* they can eat. However, an adult must still select the *right kind* of food for them.

Adults

Many adults remain active throughout their life. Many, however, lead sedentary lives—they get very little exercise throughout the day. The less active adults are, the less food they need. This means they have to cut down on the amount of food they eat, or they will gain weight.

As you mature through your life cycle, be aware of your food needs. If you find yourself gaining weight, you may have to increase your activity or cut down on the food you eat.

Elderly

Two aspects of elderly people's lives can affect their eating habits—their income and their health.

Most elderly people live alone and on fixed incomes. This means they live on a pension, on social security, or on



Kellogg Co.
Fun foods can encourage children with poor appetites to eat. Faces on pancakes are made by drizzling colored batter on a skillet and cooking slightly. The rest of the pancake is formed by pouring uncolored batter over the faces.

welfare. In any case, they have only a limited amount of money that usually does not increase, even though food prices and other living expenses go up. Their food choices are limited to those they can afford. Many, therefore, cannot buy enough food and suffer from poor nutrition. Large numbers of elderly are eligible for food stamps or other assistance programs. However, some have too much pride to apply for them while others do not know that such programs exist.

Chronic diseases and dental problems often determine the kind and amount of food the elderly can eat. Many people are handicapped by disabling illnesses such as poor vision or arthritis. They may be unable to shop or even prepare a simple meal. Dental problems or lack of teeth can often cause them to select soft foods requiring little chewing. Sometimes the elderly have no appetite for food. Because their sense of taste is not as good as it once was, food has lost its appeal.

While elderly people need to eat the foods recommended in the Daily Food Guide, their energy needs are much lower than those for younger people. They still need proteins for maintenance and repair, and vitamins and minerals for body processes. This means they need a varied diet, high in nutrients but low in calories.

A good breakfast is essential for the elderly. Instead of having their main meal of the day in the evening, many prefer to have it at noon. This is especially important for those who are more active in the afternoons than during the evenings. Some prefer to eat five or six smaller meals during the day instead of three large ones.

Many communities, aware of the nutrition problems of the elderly, have developed programs for feeding the elderly (see page 69). Most of these community programs are staffed by volunteers. You may find it a worthwhile experience to help in such a program in your community.

Let's Investigate and Report

- Find out what kind of food assistance programs your community has for the elderly. How can you assist in these programs as a volunteer? What kind of career opportunities do these programs offer?

National Broiler Council
Many foods such as chicken are low in calories. However, they can also be high in calories, depending on the ingredients. Chicken in a rich sauce or with spaghetti is higher in calories than broiled chicken with a salad.





Elderly people often have severe physical handicaps which prevent them from shopping and from preparing meals.

FOOD FOR MEDICAL PROBLEMS

Look for these terms
diabetes
exchanges
low-sodium diet
low-cholesterol diet

Some people have medical problems that call for special diets. People who are ill or convalescing are often allowed to eat only certain kinds of foods. Some people have chronic or life-long illnesses, such as diabetes, which require special foods.

The purpose of the following discussion is not to give medical advice. This must come from the physician. However, if you understand the limitations of some of the more common diets, you may be able to help someone who must adjust to a new way of eating.

Ill and Convalescing

Often those who are ill or convalescing cannot eat all the foods they are accustomed to. Usually their appetites are poor. Medication may affect their ability to eat—it can create nausea and even indigestion. Small, frequent meals are more acceptable and help to stimulate the appetite.

Physicians and hospital dietitians generally advise what the patients should eat. It is up to the family, however, to serve nutritious food to help the patient recover. Food and rest are most important in helping the body rebuild cells and tissues and regain its strength.

Perhaps you may be responsible for taking care of someone who is ill or convalescing. Follow the physician's orders exactly regarding the type of food to be served and the care the patient is to have.

You can help cheer the patient up and even whet the appetite by serving the food attractively. Keep appearance and flavor in mind when you prepare the food. Even if the patient can eat only bland, colorless foods such as cream soup and custard pudding, you can still serve it attractively. Use

bright-colored dishes and napkins on a tray. Fresh or artificial flowers can help perk up both patient and appetite.

If the patient has an infectious illness such as a cold or flu, you might consider using disposable paper or plastic dishes. These can be thrown away after use so there will be no danger of passing the germs on to other family members.

Diabetes

Diabetes occurs when the pancreas does not manufacture enough insulin to help the body use blood sugar for energy. As a result, the level of sugar in the blood stream rises above normal. Without proper treatment, diabetics cannot use carbohydrates properly, so fats become their main source of energy. As a result, they develop ketosis and can go into a diabetic coma. (See page 80.) Death can result. With proper medical treatment, diabetics can lead fairly normal lives.

Part of the medical treatment includes a special diet. Diabetics must reduce the amount of carbohydrates they eat. They can eat all of the foods in the Daily Food Guide, but the foods are divided into groups called *exchanges*. The foods in each exchange have different amounts of sugar in them. The exchanges are divided into:

- Milk exchanges
- Fruit exchanges
- Vegetable exchanges
- Bread exchanges
- Meat exchanges
- Fat exchanges

Foods in specific amounts are listed on each exchange. Any food on the list may be counted as one exchange. For instance, a slice of bread is one bread exchange. In the bread exchange list, the following are among many included: 180 mℓ [¾ cup] dry cereal, 120 mℓ [½ cup] cooked rice or grits, 5 saltine crackers, 1 small potato. Any one of these foods can be used for one bread exchange.

The physician prescribes the number of each exchange a diabetic can eat. Every diet is different, depending on the individual's needs. Page 154 shows one example of a prescribed diabetic diet.

Besides eating only the foods specified, diabetics must eat the same number of exchanges at approximately the same time every day. They should not "borrow" food exchanges from one meal and eat them at another. This can lead to serious medical problems.



Mikasa

Cheer patients up by serving food attractively. You might want to serve a meal in a basket such as this one rather than on a tray. What are some of the advantages of serving food in a basket rather than on a tray?



Knox Gelatine

Foods for the ill or convalescing are often bland in color. Bright garnishes such as greens and tomatoes can add eye appeal.

SAMPLE DIABETIC DIET

Breakfast	Lunch	Dinner
1 milk	1 milk	1 meat
1 bread	1 bread	2 breads
1 meat	1 fat	1 fat
1 fruit	1 meat	2 vegetables
	1 vegetable	1 fruit
	1 fruit	

Low-Sodium Diets

Normally, as discussed in Chapter 5, the body needs a certain amount of sodium every day. However, many people eat more of it than they need, because it is found in many foods and beverages.

In certain types of illnesses, eating more sodium than the body needs creates problems. Excess sodium holds water in the body instead of allowing it to be excreted in the normal way. The excess water not only puts a strain on important body functions, but it also causes a swelling known as edema. When this occurs, physicians may order their patients to stop using table salt. The patients may also have to stop using foods that have salt added to them such as butter, margarine, and cured meats. In some cases, the physician may order the person to stop using some foods that are excellent sources of natural sodium.

If a friend or family member is on a salt-free diet, you can help by providing moral support. Frequently people accustomed to salting foods may find a salt-free diet monotonous in flavor. You might suggest the use of various herbs and spices to make the foods more flavorful. See pages 406–411.

Low-Cholesterol Diets

People with heart disease or with high-cholesterol levels may have to follow a low-cholesterol diet. The purpose of the diet is to cut down on the amount of high-cholesterol foods the person eats.

As a rule, the person must eat fewer foods high in saturated fat, such as fatty meats, cold cuts, most cheeses, whole milk, eggs, butter, lard, gravies, creamed foods, and desserts and pastries made with animal fats. Usually the person can eat vegetable oils, fish, poultry, lean meats, nuts, bread and cereal products, fruits, uncreamed cottage cheese, skim milk, pea-

nut butter, vegetables, and low-fat desserts.

Low-cholesterol diets can be flavorful and satisfying, even to someone who has been accustomed to eating rich, creamy foods. The use of herbs and spices can help to make the food more appealing in flavor. Special recipe books are available so that eating can be just as much fun as it was before.

Remember, if you know of someone who must be on a special diet for health reasons, offer encouragement whenever you can. Your interest may help the person to stay on the diet.

Let's Explore and Report

- Collect pictures of ideas for brightening up a tray of food for these family members when they are ill: a younger brother, mother, father, grandmother.
- Find six recipes for low-cholesterol diets. How do they differ from standard recipes? What is done to make the foods flavorful?
- Prepare a bulletin board showing how people's needs for nutrients change as they mature through the life cycle.
- Plan a dinner for yourself and three friends, one of whom is a diabetic.

What Would YOU Do?

- Your parents must go out of town for the weekend, so you have the responsibility of taking care of your two young brothers, ages 6 and 9. You must plan and prepare their meals.



Chapter 9

Planet Earth: Enough Food for All?

To help you to . . .

- Interpret some of the causes of the world food crisis.
- Differentiate between developed and developing countries.
- Understand why the world food supply fluctuates.
- Draw conclusions about what can be done to provide enough food for all.

About 1 billion people—25 percent of the world's population—go to bed hungry every night. Starvation raged in many parts of Earth in the 1970s.

Famines are nothing new. Throughout history, starvation has periodically wiped out large populations. Europe alone has had about 50 famines since 1850. Over 1,800 are recorded in Chinese history. Famines, for the most part, have been caused by crop failures. Today, however, they stem from a complex series of events.

NASA

Earth: One of nine planets revolving around the star named Sun. Earth is the third planet from the Sun, some 149 637 000 km [93,000,000 miles] away. As far as is known, it is the only planet in the solar system that is inhabited. Population in 1977: over 4 billion. Estimated population in 2000: 6.4 billion. Can Earth supply enough food to feed everyone?

Look for these terms
arable land
developed countries
developing countries
"green revolution"
population explosion
protein supplements
World Food Council

THE GOOD YEARS

Following World War II, countries turned their attention to rebuilding industry and agriculture. Countries were generally divided into two categories—developed and developing. The *developed countries* had reached a level of industrialization and food production to provide an adequate standard of living for the people. *Developing countries* had not reached this capacity. Many were extremely poor with no industry and with limited food production.

The period between 1950 and 1972 was one of unprecedented growth. Good weather combined with advanced farming techniques produced more food than ever before. Countries such as Brazil and China emerged in the 1970s as developed nations. The USSR embarked on a plan to reform agriculture and increase crop production.

In the United States, between 1950 and 1972, more food was grown than was needed to feed the people. As surpluses began

to increase, grains were stored as a reserve supply. Farmers were paid not to grow food, but surpluses still increased. Special food assistance programs for the needy and for school lunch were initiated, as a way of using the overabundant supply. Surplus foods were also given to developing countries as part of the Food for Peace Program. Although the United States had only one percent of the world's farmers, it produced 15 percent of the world food supply.

Many of the developing countries managed to produce enough food between 1950 and 1970. Most of it, however, was in the form of cereal grain. Since cereal grains do not contain all of the essential amino acids, as explained in Chapter 5, severe protein shortages developed in many parts of the world. Children especially suffered. Many developed kwashiorkor and died.

Two significant events took place between 1950 and 1970 that made people think the problem of world hunger had been solved. These were the development of protein supplements and the "green revolution."

Protein Supplements

Researchers in the United States developed protein supplements made from various plant proteins. In developing countries, these could be mixed or used with local cereal grains and other foods to provide all of the essential amino acids.

The first of these supplements was Incaparina, used successfully in feeding infants and children. The proteins in this mixture are of the same quality as those in milk.

Other products developed with protein supplements include:

- *CSM.* This corn, soya, and milk blend has been used in developing countries. A serving of 100 g [3½ ounces] daily supplies one-half of the known nutrients and one-third of the calories required by children one to three years old.
- *WSB.* This is a blend of wheat flour, wheat protein concentrate, soy flour, and vitamins and minerals.
- *Cornmeal* fortified with soya.
- *Whey products.* Whey is a by-product of cheese production—the fluid drawn off after the cheese has coagulated. It contains vitamins, amino acids, lactose, and proteins. Already several whey products have been made for use in developing countries.

The "Green Revolution"

Grains normally grown in temperate climates, such as wheat, rice, oats, and rye, do not grow as well in the tropics. Extreme climate conditions, ranging from excess heat to heavy seasonal rains, keep the yields low.

In the 1960s, new "miracle" types of wheat and rice, developed for use in the tropics, doubled production. They were known as Mexican wheat and miracle rice.

While Mexican wheat can double production, it needs a dependable water supply, either high rainfall or irrigation, and an ample supply of fertilizer.

The combination of the miracle seeds, a dependable water supply, and fertilizer turned sparse tropical farmland into lush, productive areas. This was the "green revolution." Soon it spread to the Far East, Turkey, Afghanistan, Nepal, and Pakistan.

As population has increased, land for farming has become more scarce. In 1975, Egypt, faced with steadily decreasing farmland, joined the green revolution and planted Mexican wheat. The Egyptians hoped to produce enough food for the growing population.

From the end of World War II to 1972, developed countries increased their food production by 24 percent. The increase in developing countries was less —only 6 percent—but it was enough to keep food supplies ahead of the population growth. Many people became convinced that the struggle against malnutrition and hunger was under control.

1972—The End of the Good Years?

In 1972, the world suddenly found itself faced with a food crisis. Mass starvation spelled doom for millions in many parts of the world—Africa, India, Asia. For the first time in more than twenty years, the production of cereal grains declined. World food production fell one percent.

The United States dug into its food reserve supply to rush aid to the starving people around the world. In 1972 and 1973, severe weather cut back Russian wheat production. They purchased a total of 24 million tons of grain from the United States. By 1975, the United States grain reserves had dwindled to practically nothing. It appeared that the United States' role as a continuous source of food for the world was nearing an end.

WHAT CAUSED THE FOOD SHORTAGE?

International food experts generally agree that the main cause of the food crisis is the population explosion. In addition, bad weather and general inflation, along with other influences, make it difficult for developing countries either to grow enough food or to buy it.

Developed and Developing Countries

The developed countries today include those in Europe and North America as well as the USSR, Australia, New Zealand, South Africa, Brazil, Japan, and Israel. All others are still developing. Of approximately 100 developing countries, about 30 are extremely poor.



FAO

A new high-yielding variety of rice on left, compared with the traditional type on the right. Tests are being conducted in south India.

Cereal grains are the main source of food energy in every country in the world. Wheat is the most widely used. Rice is the basic food of the Far East, while corn is the staple food in Latin America and parts of Af-



Florida Dept. of Citrus

As nations industrialize and prosper, the people begin to eat larger amounts of high-quality protein such as poultry and meat.

rica. Other grains such as oats, rye, sorghum, and millet are also basic foods in many countries.

In developed countries, most of the grain is usually fed to animals, which are eaten as food. In the mid-1970s, an average American ate about a ton of grain a year. Of this amount, 91 kg [200 pounds] was in the form of breads and cereals and 820 kg [1,800 pounds] was fed to animals.

As nations industrialize and become affluent, the people eat larger amounts of animal foods and smaller amounts of grain products. In Japan, for instance, fish and rice have been partly replaced by meat and poultry. From 1965 to 1975, the average Japanese increased the amount of meat eaten by 250 percent, poultry by 800 percent, and eggs





FAO

Child suffering from severe malnutrition recovers in a Thailand hospital. Children in child nutrition center in Thailand are served soy milk, a high-protein food made from soybeans.

by 200 percent. American foods, such as steak, fried chicken, and hamburger, have become popular in urban areas.

In the developing nations, people eat grains directly as cereals. An average adult in a developing country eats about 182 kg [400 pounds] of grain a year. Children suffer the most. In many of these countries, tradition demands that men eat first and what is left is for the women and children.

The United States has only five percent of the world's population, but it eats 35 percent of the world's food. An average American eats at least 20 percent more food than needed.

In affluent countries, such as the United States, food is often wasted. When you eat in a restaurant, notice how large the servings are. Note also how much food is left on plates and scrapped. How much food do you waste in your home? More food is thrown away in the United States as garbage than is consumed by some developing countries.

The Population Explosion

The world's population is growing at a rate of 2 percent a year. It is estimated the 1975 population of 3.9 billion will increase to 6.4 billion by the year 2000. About 90 percent of this increase will be in developing countries. Thus by the year 2000, the developing countries will have a population of 5 billion people or nearly four-fifths of the world's total.

What caused the population explosion? The drastic increase

is a combination of high birth rates and decreased death rates. After World War II, developing countries had high birth rates. However, they also had high death rates, which kept the total population growth down. Advances in medicine and aid in the form of public health and medical programs helped cut the death rate considerably. However, the high birth rates continued.

Although the world population increased at an average of 2 percent in 1975, it was higher in developing countries. Population increased by:

- 3 percent in tropical Latin America.
- 2.5 percent in Africa.
- 2.3 percent in Asia.
- Total 2.5 percent increase in developing countries.
- Total 0.8 percent increase in developed countries.

Food production also increased, but it could not keep up with the population explosion. Experts estimate that by 1985 the world's need for cereal grains may exceed the supply by 90.7 million metric tons [100 million tons].

Changes in the Weather

In 1972, the first of a series of severe weather changes occurred, causing crop failures. According to many scientists, Earth's weather is gradually changing for the worse.

- United States and Canada—Heavy spring rains delayed planting. Droughts occurred. Frosts came early.
- USSR—Droughts severely damaged crops, forcing the USSR to buy grain from the United States.
- Africa—A drought began in 1968 in North-central Africa in the Sahel. The Sahara Desert expanded southward into the area at a rate of 24 to 32 km [15 to 20 miles] a year, leaving millions starving. A huge international relief program barely kept people in the region alive.
- Far East—The monsoon did not follow the normal pattern. The rain began late, causing heavy flooding.
- Australia—Rain delayed wheat planting.
- Europe—The growing season became a little shorter.

According to climate experts, weather follows a series of cycles, some short and some longer. Two-to-four year droughts occur in the Great Plains of the United States at about 20-year intervals. The 1930s and the 1950s were years of severe droughts in the area.

Climates have always varied widely. Studies have been made of ice samples from the Arctic, covering the past thousand years. They show a definite cycle of climate changes, with periods of good and bad weather. The unfavorable periods last about 25 to 40 years or more.

North Europe, Greenland, and Iceland had a spell of severe cold weather from 1400 to 1800, known as a "little ice age." Before that time, however, the weather was much warmer. In 982, the Vikings discovered Greenland and named it for the color of its lush, green grassland. During the long cold spell that followed, snow and glaciers covered the land and drove the Vikings out.

Although the world has not reached another ice age, Earth shows some signs of cooling off. Northern latitudes appear to be cooling. Spring is coming later while frosts are coming earlier. The weather is more variable.

If the world climate becomes less favorable for growing crops, how can enough food be grown for all of the people? Some experts recommend that an international store of reserve grain be stockpiled during good growing years. In times of famine, the reserve supply can be used to feed people.

Inflation

The inflation that hit the world in the 1970s spelled disaster for many of the poor developing countries. In addition, the Organization of Petroleum Exporting Countries (OPEC) raised oil prices sharply. This greatly increased the cost of fuel for machinery, for transporting crops, and for manufacturing fertilizer.

Inflation brought high prices on food, fuel, and fertilizer. Since the "green revolution" is



Wheat Flour Institute

Through science and technology, industrialized and developed countries have been able to increase their food production.

based on the use of machinery, irrigation, and fertilizers, many nations could not afford these essentials. Supplies grew scarce and costly. Countries unable to buy supplies needed for producing food also could not afford to pay for imported food.

As food became short and prices skyrocketed, food aid programs found themselves deeply affected. No longer could they depend on surpluses from the United States, which had been donated in the past. Food for aid programs had to be purchased. Inflation cut into the purchasing power of these organizations at a time when they were faced with increasing demands for food aid.

Other Causes

As stated earlier, as countries become affluent, they tend to select more expensive foods such as meat. This means more grain is being used in countries such as the USSR and the United States to feed livestock. It takes 5 kg [10 pounds] of grain to produce 454 g [1 pound] of beef, about 2 kg [4 pounds] to produce 454 g [1 pound] of pork, and 1.1 kg [2½ pounds] to produce 454 g [one pound] of chicken.

Waste also causes food shortages. Land may be wasted

Food production in developing countries . . .

All photos on this page FAO

Modern farming techniques are based on machinery, fertilizer, and irrigation. All of these require petroleum products. People in developing countries cannot afford the high price of machinery and petroleum and related products. This is one of the reasons many continue to farm with traditional methods.



A woman in the Andes mountains in Ecuador breaks up the soil in her field prior to planting potatoes.



A young boy and his father in India use the traditional method of preparing a field for planting. It is called "planking."

An eleven-year-old boy in Peru uses a chaquitaclla or hand plough.



Girls in a rural education center in Upper Volta, Africa, draw water from a well to irrigate their plot of land.



by poor farming practices and water wasted by pollution and faulty irrigation systems.

Waste can also occur during shipping and marketing. Developing countries usually have poor transportation and inefficient food distribution systems. People in one part of India, for instance, can have an abundant supply of food while those in another part are starving.

In Africa, up to one-third of stored grain may be lost because of poor storage practices. Rats, insects, rust, and mildew damage stored food. Lack of refrigeration in tropical countries causes millions of dollars loss in food. In parts of Africa, 40 percent of the eggs, fruits, and vegetables sent to markets are inedible. In the Near East, half of the milk spoils.

Wars also cause mass starvation. In 1971, Bangladesh was engaged in a nine-month war of independence against West Pakistan. Food production all but halted. When the country achieved independence, the government tried to renew food production. Floods destroyed many of the crops and millions of people faced starvation. A world aid program sent $2 billion, mostly in food, to Bangladesh, with the United States supplying 25 percent.

WHAT IS THE SOLUTION?

In November, 1974, a World Food Conference was held in Rome, Italy, sponsored by the United Nations. The purpose was to find workable solutions to the world's food dilemma. The conference, attended by delegates from 123 nations, agreed to set up a World Food Council, with headquarters in Rome, Italy. The Council reports to the United Nations. The Conference declared the battle against hunger is the "common responsibility of all countries. Every man, woman, and child has the inalienable right to be free from hunger and malnutrition."

The main goals of the World Food Council are to:

- Set up an emergency food relief and food aid plan.
- Build up a world food reserve of 27.2 million metric tons [30 million tons] of grain.
- Increase food production sharply in developing countries.
- Organize a worldwide early-warning reporting system of food production. This can help to head off food emergencies.

Another World Food Conference was held in Ames, Iowa, in June, 1976. Over 1,000 people in food-related professions met to attempt a scientific, non-political approach to solving the world food problem.

Modern agriculture depends on fuel for energy. Fuel is needed to manufacture fertilizers and to run machinery which plows land, irrigates soil, harvests crops, and processes some crops. A shortage of fuel and increased prices have already affected food production. Whether or not fuel is readily available will influence the future of agriculture in both developed and developing countries.

Increasing Food Production

Developing countries can be helped to increase their food production in several ways.

Although emergency aid is essential, long-range programs are also needed. Developing nations need to be helped to help themselves, a challenge that only the developed nations can meet. Sacrifices may be required by developed nations, such as higher food prices and smaller supplies. It is up to governments to determine if they are willing to make these sacrifices. International food experts agree that Earth probably will not have an overabundant supply of food as it had from the 1950s to 1972.

MORE LAND FOR GROWING FOOD

Of the ½ billion hectares [3½ billion acres] of land on Earth, only 11 percent is arable. Land that is *arable* is fit for cultivation and can be used for growing crops. The rest of the land is either in forests or cannot be used for growing food. Some, for instance, is in severe climate areas where food cannot be grown, such as mountains or





Many land areas, such as mountains and hilly regions, cannot be used for growing food. In addition, expanding cities and highway systems take up valuable farmland.

polar regions. Some of it is desert land while other parts are so rocky that nothing can grow there. The chart on this page shows the percent of arable land in the major continents.

In some countries, all of the available land is under cultivation. In others, especially Africa and Latin America, large areas remain uncultivated. The costs of building up these areas would be extremely high. Land would have to be cleared, roads built, and often vast irrigation works constructed. Research would have to be done on the soil to determine what would grow best and perhaps to develop new types of plants for the areas. Diseases and insects would have to be researched to provide chemicals for controls. Experts usually agree that it would be more economical to increase production on the land already in use than to expand into new areas.

ARABLE LAND IN THE WORLD

Continent	Percent of Arable Land
Asia, excluding China	23%
North and Central America	18%
Africa	15%
Russia	15%
Europe, excluding Russia	11%
Mainland China	8%
South America	7%
Oceania (over 10,000 islands in the Pacific Ocean)	3%

Source: FAO, 1968.

MORE MECHANIZATION

The use of farm machinery can greatly increase food production. Machines can do heavy farm work more quickly and efficiently than animals or human beings can.

Nutrition Education Programs

Some developing countries have nutrition education programs to help people make better use of their food supplies. In India, mobile kitchens are staffed by home economists who teach improved methods of cooking and preserving food. Turkey has a school garden program. In countries such as Volta, Botswana, Malawi, Chile, and Peru, people are taught the nutritional value of locally produced foods and how to grow them.

These programs not only help people make better use of local foods, but also help them to understand new foods introduced into the area. People's eating habits change slowly. Nutrition education can help them realize the importance of protein supplements or a new type of grain as an addition to the food they usually eat.



FAO

A female trainee in an agricultural college in Botswana, Africa, learns to drive a tractor.

An International Approach Is Needed

Food experts stress that an international policy is needed regarding food. No longer is there an excess supply of food anywhere in the world. There will probably be more rather than fewer calamities involving food shortages. A crop failure in any major food-producing country such as the USSR or India affects the entire world.

Some experts feel that a new world food reserve system is needed. They claim that an international supply of food reserves, managed by a worldwide organization, would keep food prices at a level people could afford. The supply would also help countries during food emergencies.

More Food Research

Another possible solution is the development of new products through food research.

Cereal grains must be developed with more essential amino acids. Experiments are currently underway to produce corn with higher quality protein.

The following are only a few of the many possible sources of protein:

- *Oil Seeds.* Seeds such as cottonseed, soybean, and peanut are pressed for oil. The material left contains fiber, carbohydrates, and proteins. This material is either thrown away or used as fertilizer or animal feed. Researchers are trying to find methods of using the proteins as supplementary foods.
- *Fish Protein Concentrate.* This concentrate is an odorless flour mixed into other foods. It is made from fish that are normally not used on the consumer

Nutrition education programs . . .

Student in a rural training center in Chile learns to prepare nutritious meals from fresh and processed foods.

FAO





FAO

Girls in Dahomey, Africa, are trained as instructors. They learn to make the best possible use of local foods such as corn, sorghum, yams, cassava, and fish. In turn, they will teach others in the area.



International Development Assoc.

Instructor helps women in Malawi, Africa, plan nutritious meals by showing them how to select and use local vegetables.

market. They are too small or contain too much oil for processing. The concentrate is a wholesome product with high nutritive value.

- *Seaweed.* Certain kinds of seaweed are eaten in Japan and other Far East countries. Wider use may be possible in other areas..

SPACE AGE DEVELOPMENTS

Extensive research has been under way to develop foods for space travel. Skylab, America's first space research station, offered astronauts the finest nutritious food ever developed for the space program.

Four different types of foods were featured. Three were freeze-dried foods with varying degrees of moisture removed. The meals included items such as soups, scrambled eggs, beverages, desserts, cookies, bacon wafers, lobster Newburg, meatballs with sauce, and turkey and gravy. In addition, frozen precooked or fresh foods such as filet mignon and prime rib were also served.

As a result of space food research, about 120 freeze-dried foods are available now. However, they are too expensive to process. As the food industry improves its techniques, these foods will be made available in the consumer marketplace.

Space food research may take another direction. There is growing interest in the possibility of manufacturing foods without agriculture products but through the use of chemicals. Several high-energy food compounds have already been discovered, but they are too expensive to produce for ordinary use. As food research and technology advance, these products may become common sources of food in the near future.

Organizations That Help

Numerous agencies, both government and private nonprofit, help the hungry in the world.

Affiliated with the World Food Council, the Food and Agriculture Organization (FAO) has its headquarters in Rome, Italy. Organized in 1946, it is the largest international aid organization in food, agriculture, forestry, and fisheries. In addition to food aid, FAO attempts to build agricultural, forestry, and fishery enterprises where none existed before.

Requests for assistance far exceed FAO's budget. Therefore it is trying to focus its efforts on helping the 30 poorest of the developing countries.

Other organizations involved in food aid are CARE, Catholic Relief Services, Meals for Millions Foundation, Church World Service, Africare, Oxfam-America, and Task Force on World Hunger.

The food shortage and inflation have affected food aid distributed by these organizations. Since the United States food surplus is all but gone, these organizations must depend on private funds for food purchases. The high price of food has placed severe limitations on the amount of food they can distribute.

Only a few short years ago, people thought the battle against hunger had been won, but apparently it has only begun.

Let's Explore and Report

- Select an underdeveloped country and report on what is being done to increase the food supply.
- Research the latest international efforts to solve the growing food problem.
- Bring to class newspaper and magazine articles dealing with the world food problem.
- Survey six or more friends and neighbors. Determine whether or not they understand the seriousness of the world food crisis. Compare with your classmates.

What Would YOU Do?

- You and two close friends have become highly concerned about the world food crisis. You decide to discover ways you and others in the community can help to lessen the food crisis, even in a small measure.

Space foods . . .



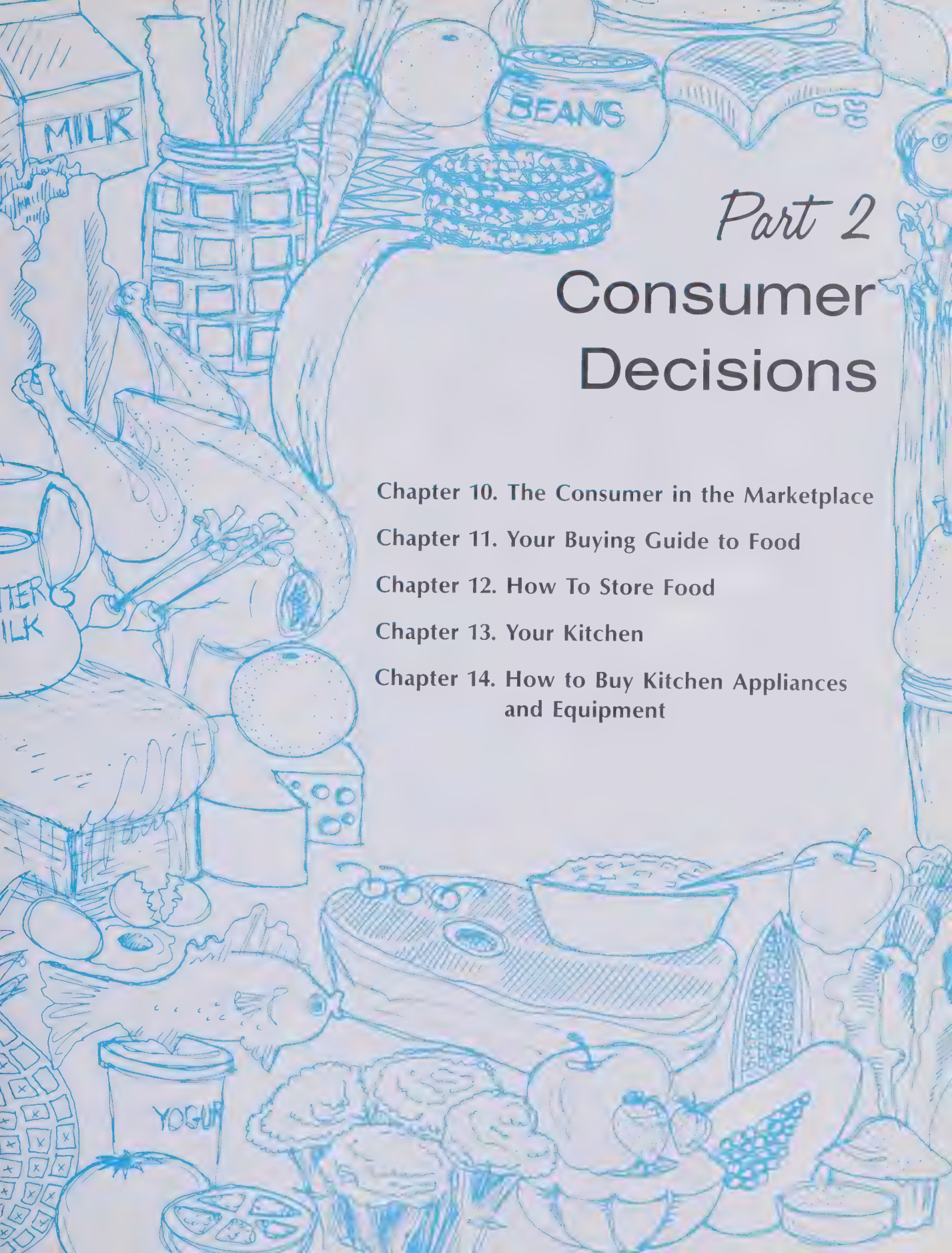
NASA

Scientist-astronaut Owen K. Garriott (above) reconstitutes a prepackaged container of freeze-dried food aboard Skylab 3. Note the knife and fork on the food tray and the utensil with which Garriott stirs the food mixed with water. Skylab was the first manned space program by NASA to give crew members an opportunity to eat with the same type utensils used on Earth.



NASA

Cosmonaut Anotoliy V. Filipchenko (left), commander of the Soviet ASTP back-up crew, in the Apollo Command Module trainer in preparation for the Apollo-Soyuz Test Project. He is sampling a package of freeze-dried strawberries and uses the universal sign language to show he approves of the food.



Part 2
Consumer Decisions

Chapter 10. The Consumer in the Marketplace

Chapter 11. Your Buying Guide to Food

Chapter 12. How To Store Food

Chapter 13. Your Kitchen

Chapter 14. How to Buy Kitchen Appliances and Equipment


10
11
12
13
14
15

Chapter 10

The Consumer in the Marketplace

To help you to . . .

- Make careful decisions in the marketplace.
- Understand how consumer aids can help you.
- Buy food that gives the most value for your money.

Every time you buy something—whether it is a product or a service—you must make decisions. You must decide what to buy, where to buy it, and how much to pay for it. These decisions are especially important when you shop for food. They can determine the nutrition you get every day, the enjoyment you get from your food selections, and the money you spend or save.

Look for these terms
buying clubs
co-ops
delicatessens
supermarkets
supply and demand

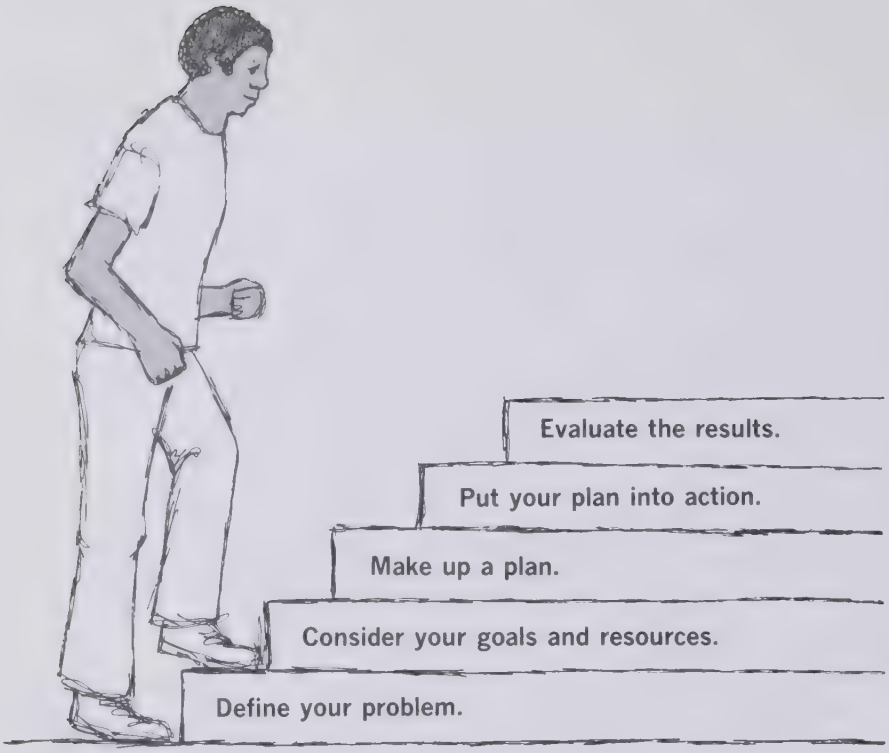
Jewel Companies, Inc.
Shopping for food in today's marketplace is a challenging experience for consumers. Important decisions must be made that can affect health and finances.

HOW DO YOU MAKE DECISIONS?

Using the decision-making process can help you to be a better shopper. The process consists of several basic steps:

- *Define your problem or set up your goals.* For instance, you may want to buy food for the coming weekend.
- *Consider your goals and resources.* Your resources are what you have to help you meet your goal or solve your problem. They can be material resources, such as money or appliances. They can also be personal resources, such as time or your skills. If you have a freezer, you may want to buy ready-frozen foods. If you have time, you may prefer to prepare recipes from scratch and freeze them. If the week is to be busy, you will probably want foods you can prepare quickly and easily.
- *Make up a plan.* Decide what kind of recipes or foods you need and when you are going to prepare the food. How much time will you have to shop and when? Also decide how much money you can spend.
- *Put your plan into action.* Make up a list of the food you need for your purpose, buy the food, store it properly, and prepare it if necessary.
- *Evaluate the results.* Determine how well your plan worked. Perhaps you forgot to buy one of the items you needed. You may have found a different cut of meat on sale and bought it instead. It worked just as well as your original idea. Maybe you spent more money than you wanted to. Use this information to improve your decision-making techniques so next time your plan will work a little better.

You can also use the decision-making process as you shop. When you see items on



Take these steps when you have to make a decision.

sale, decide whether they would meet your needs just as well as the items you originally planned to buy. Compare brands and decide which is best from the standpoint of nutrition and cost.

As you consciously use the decision-making process, it will become a habit that can help you make wise choices in the marketplace. You can save time and money, and get better results.

One of the most important decisions to make is how much to spend on food.

HOW MUCH SHOULD YOU SPEND ON FOOD?

On the average, people in the United States spend about 16 percent of their income on food. This varies with income. Low-income families can spend as much as 50 percent of their money on food while those in higher brackets can spend as little as 12 percent.

Prices and personal preferences affect the amount of money you spend on food.

Why Do Food Prices Change?

Food prices change for many reasons. *Supply and demand* are the most important ones. If demand is greater than supply, prices are higher. If supply exceeds demand, prices are usually lower.

As world population increases, so does the demand for food, as discussed in Chapter 9. Competition for food increases prices.

Weather conditions affect food supplies. Severe frost in the southern United States can damage the citrus crop so the supply is much lower than normal.

Seasonal supplies of food also affect the price. In winter months, when greens must be shipped from southwestern states, prices may be relatively high. During the summer, most areas can produce their own greens locally, so prices are usually lower.

Convenience in foods can add to the cost. Every step in processing usually adds to the cost. Consumers must pay for this built-in "chef service" in some of the convenience foods.

Higher food prices are also the direct result of irresponsible action on the part of consumers. Careless handling can damage thousands of dollars in food. Shoplifting in grocery stores is as common as it is in other retail establishments. Besides food, people often take the shopping carts they use to carry out their groceries. In some stores, one of every five carts is stolen.

The costs of shoplifting and careless handling by consumers must be added to the price of the food. Otherwise the storeowners would lose money and have to go out of business. In some areas, as much as five percent of the food price goes to pay for damage and shoplifting.

Your Food Selections Determine Budget

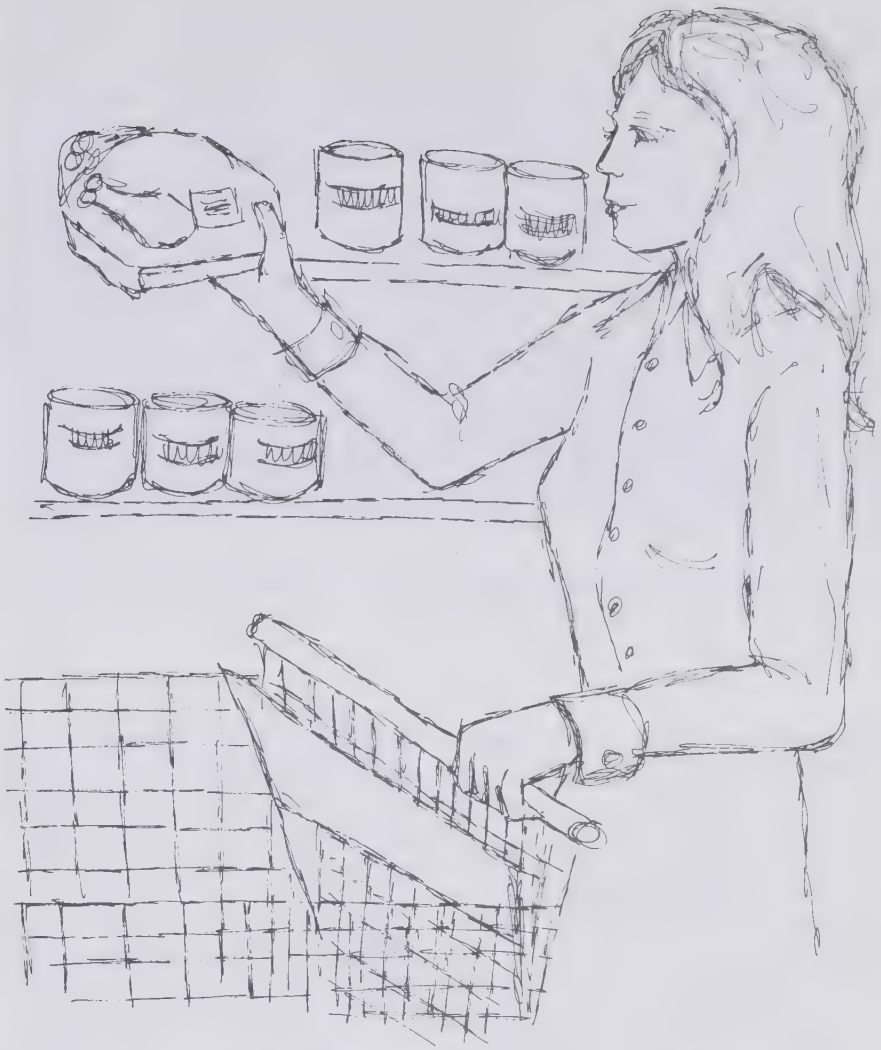
Your food selections probably are not based entirely on price but on other reasons as well.

Your values influence your food choices. If you value time over money, you will probably select quick-cooking foods, regardless of the cost. Thus you may buy expensive foods that broil quickly, such as steak, rather than foods that take a long time to cook, such as stew meat.

Personal preferences also affect your selections. You may like the flavor of a certain brand of pickles or canned fruit, even though it costs far more than others.

Your life style also determines your food selections. If you constantly watch your weight, your food choices will differ considerably from those made by a person who has no weight problems and loves to eat.

How can you get the most from your food dollar? Plan your food choices around lower-priced foods in the Daily Food Guide. Then, if your budget allows, add luxury items.



If you select a perishable item and then change your mind about buying it, return it to the refrigerated or frozen food case. Do not just put it on any grocery shelf where it will warm up and spoil.

WHERE WILL YOU SHOP?

Food is sold by many types of grocery stores, some large, some small. Large shopping plazas may have a number of food stores. A small residential area may have only one.

- *Supermarkets.* Operate on a self-serve basis. Vary in size from small neighborhood stores to large ones carrying thousands of items. Most also carry general merchandise, ranging from drug and beauty items to clothing.
- *Buying Clubs and Co-ops.* Associations composed of neighborhood residents who buy direct from wholesalers and thereby save money. Co-ops are incorporated while buying clubs usually are not. An economical way to buy food if they are well organized and run efficiently.
- *24-hour Convenience Stores.* Neighborhood self-serve stores or large supermarkets. Open 24 hours a day for consumer convenience. Prices may be slightly higher because of



Jewel Companies, Inc.

If you have a choice as to where to shop, select a store that is clean and neat. Shelves and cases should be well stocked and offer a selection of brands.

increased costs of staying open all day and night.

- *Specialty Stores.* Specialize in one type of food—dairy stores, bakeries, meat shops, cheese stores, and ethnic food stores.
- *Delicatessens.* Sell ready-to-eat foods such as meat, cheese, sausage, barbecued chicken and ribs, salads, and stews. Some may sell only Jewish food.
- *Farmer's markets.* Large markets, often outdoors or partially enclosed, selling produce. Many different vendors, each with a separate counter or stall. Some also sell other foods, such as meat, cheese, and baked goods.
- *Roadside stands.* During local growing seasons only. Roadside stands adjacent to farms, selling products grown nearby. Most products are fresh-picked but may need to be washed before storing. Usually the stands are not refrigerated so products may lose quality quickly.
- *Pick-your-own.* Farms often offer a low price on produce during harvest time if you pick it yourself.

Selecting a Store

Studies show that, as a rule, comparison shopping from store to store does not save as much money as people think. This is especially true if you add the cost of gasoline used. If you spend more time shopping in one store, comparing prices and values, you may save more than you would shopping in different stores.

Sometimes you may not have a choice as to where to shop, so you may be limited to one nearby store. If you do have a choice, however, here are some signs to look for when selecting a store:

- *Compare prices in advertisements* for the stores involved. How do both regular and sale prices compare?
- *Is the store clean and neat?* Do you smell any unpleasant odors as you walk in?
- *Are shelves and cases well stocked?* Are some empty?
- *The produce section.* Is perishable produce kept chilled? Is produce in good condition? Is there a variety? Are recipes or other information available, especially for the more unusual items?
- *Dairy products case.* Is the case cold so food is well chilled? Is it clean? Does it have any bad odors? Are cartons, bottles, and packages in good shape? Are prices well marked? Do you have a choice of several brands so you can select the quality you want? Is there a variety of products?
- *Meat case.* Is it cold? Is food arranged in an organized way so you can easily find what you want? Will meat clerk divide a large package into smaller ones so you can buy just the quantity you want? Are meat packages leaking? Is there an unpleasant odor?
- *Dry storage shelves.* Are the shelves well organized? Are prices visible? If the store is large, do overhead signs identify the food on each aisle so you can easily locate what you

want? Is there a variety of brands? Does the store have its own private brand at slightly lower prices?

Let's Explore and Report

- Visit several stores in your area. If you were going to select one for your regular food shopping, which would it be? Why?
- Plan a week's food choices for a single working man whose take-home pay is $109 a week. He lives alone, carries his lunch, and enjoys cooking. Determine how much the food would cost by using food advertisements in newspapers or getting the information from a grocery store. What percentage of his take-home pay is he spending on food?

Look for these terms
impulse buying
open dating
standards of identity
unit pricing
universal product code

BE AN AWARE SHOPPER

Many consumer aids are available to food shoppers to help them get better value for their money. These include advertising, coupons, labels, unit pricing, and open dating. Understanding sales techniques used by stores can also help you shop for food.

Advertising

Most food stores advertise in daily newspapers at least once a week, and usually have sales.



Jewel Companies, Inc.

When you shop, compare prices and nutritional quality. Take advantage of special sales if you can use the food.

Thoroughly read the ad for your favorite store. You may find many bargains printed in small type. If you have a large amount of storage or freezer space, also read ads for other stores for special sales. If you can use the food they have on sale, a special trip to the store can probably save you money on a quantity purchase.

Many of the ads carry coupons offering a specific amount off the regular price. You will need to have the coupon with you to get the discount price. Do not expect the store to sell you the item at the reduced price if you do not have the coupon. Food processors also have advertisements in newspapers with coupons for reduced prices.

Take advantage of coupons if you can use the food. If you do not really want it, do not buy it just because of the reduced price. You may eventually throw it away and will have lost money instead of saving it.

Food Labels

By law, food labels must give the following information (see Appendix F):

- The legal, usual, or common name of the food, such as sweet corn, in clearly printed type.
- The variety, style, and packing medium, given in connection with the name of the food, such as *whole kernel* sweet corn or *cream style* sweet corn. Names of food mixtures must be given with the most prominent food first. If the product is labeled, "Beef with Noodles," it means it has more beef than noodles. If the opposite is true, and the product has more noodles than beef, it must

be labeled, "Noodles with Beef."

- The net quantity of the container, given in two types of measurements. First the weight is given in all ounces and then in pounds, pints, or quarts. Some labels also show metric quantities in grams, kilograms, milliliters, and liters.
- The name, address, and zip code of the manufacturer, packer, or distributor.
- A list of dietary properties. Some foods, for instance, may be salt-free. Fruits and soft drinks may contain artificial sweeteners.
- A list of additives, if any.
- If the product is below the quality standard set by FDA, that must be stated on the label. For instance, a can may have unevenly trimmed peaches. These may be acceptable by you and usable. However, the law states the label must tell you why the product does not meet the established standard.
- All information must be in English, even on imported products.
- A list of ingredients, in descending order of their predominance. This means the ingredients in largest quantity must be listed first, followed by those in smaller quantities. If ingredients are not listed on the label, it means a standard of identity has been set up for that product. A *standard of identity* specifies the ingredients a product such as catsup, mayonnaise, or jam must contain. If additional foods are used, however, they must be listed.

In addition to the required information, labels may also have the following:

- Grade shield and inspection mark.
- A clear picture of the product.
- The brand name.
- The size and degree of maturity. Peas, for instance, may be described as young or mature.
- Degree of seasoning. Sausage, for instance, may be labeled as mild or hot.
- Number of cups in container.
- Recipe panel, giving directions for using product as well as menu ideas.

If the product is enriched or fortified, or if nutritional claims are made for it, the label must show nutrition information. See pages 70, 71, and Appendix E.

How can labels help you? Besides identifying the food, they tell you the form. You may want different forms for various uses. For instance, you may want pineapple slices for a salad but crushed for a dessert sauce. If nutrition information is included, you can compare nutrients in different brands to determine which has the most.

When you read labels, you may notice a 2.5 cm [1 inch] bar of straight lines. What does it mean? It is known as *universal product code* (UPC). This is a system developed by food store chains and food manufacturers for computerized checkout counters. Instead of prices being punched out on a cash register, they are totaled by computer.

The lines are codes for the computer. They represent the kind of item, the manufacturer or retailer, and the specific product. A laser beam scanner at the checkout counter "reads" the information on the bar and sends it to the computer. The price and name of item are flashed on a small screen for the customer to see. The sales receipt the customer gets identifies the product, price, and weight. Some receipts may give information on the item's tax status, change and trading stamps due the customer, date, time, and checkstand number.

UPC not only totals the customer's bill but also keeps a running inventory for the store. It keeps track of the sale of new items, measures the effectiveness of advertising campaigns, and instantly analyzes the data.

Many consumers object to UPC because prices may not be marked on containers. This means the store management must keep prices on shelves up to date so consumers will know how much an item costs before selecting it.

Unit Pricing

Unit pricing is the cost per ounce, item, or other convenient unit. Stores using this sys-

tem show the unit price on the tag attached to the shelf on which the product is placed.

Often containers for one type of food come in several different sizes, making price comparisons difficult. People assume larger sizes are always more economical. However, larger sizes may cost as much or more than two smaller packages of the same amount.

Instead of your having to figure out the price per ounce or other unit, the store does it for you with unit pricing. Not all stores have unit pricing. When they do, few consumers understand it or take advantage of it. If the store you shop has unit pricing, use it to make more economical food choices.

Open Dating

Open dating can help the consumer judge the freshness of the food. It is a date appearing on packaged food, which can be easily read and understood. The date may appear in several forms, such as Oct. 15, 10-15, or 1015. It may or may not include the year.

Usually, you can find these dates on perishable and semiperishable products, such as eggs, dairy foods, bakery goods, and refrigerated doughs.

Keep in mind that open dating does not always assure freshness. Storage, handling, and temperatures affect the quality of the product. If the food has not been stored properly, its shelf life will be shortened. In that case, the date on the package will be meaningless. Rely on your own judgment as well as the date stamped on the package. Look for signs of quality and freshness when you make your selection.

Selling Techniques Used by Stores

Supermarkets use many techniques to encourage customers to buy. These include the layout of the store and where products are located, where packages are put on shelves, and displays. Certain food items give stores higher profits than others, so consumers are encouraged to buy these.

Studies of shoppers' habits show they usually walk around the outer sections of the store before going up and down aisles. Most stores place high-profit items such as baked goods, produce, and meat around the edges. This is convenient for shoppers. It also means shoppers will pick up the more profitable items first, before they begin to worry about how much money they are spending.

High-profit items are generally stacked on shelves at eye level, within easy reach. Less profitable items are put on lower or higher shelves. Candies and children's cereals are usually put on lower shelves to attract the youngsters. The end of each aisle is also a good place for high-profit items.



The universal product code (UPC) is used with computerized checkout counters.

The checkout counter is an excellent place for impulse buying. *Impulse buying* means choosing something you had not planned to buy, just because you suddenly want it. While customers wait in line, they have an opportunity to select magazines, candy, and other high-profit items.

Displays also encourage people to buy. Sometimes an eye-catching poster will feature a sale item, such as strawberries. High-profit items will be tied in with the sale item, such as shortcake and whipped topping. Recipes may be offered.

PLAN YOUR SHOPPING

Studies show you can save as much as 20 percent of your food dollar if you have a shopping list and stick to it. A shopping list keeps you from buying impulse items you may not use. It also lets you think about comparing prices and brands instead of wondering what to buy.

Shopping List

Canned, packaged
Peanut butter, Chunky
Flakes cereal
Vegetable soup, 2 cans

Meat
Chicken, broiler, for 6
Pot roast

Dairy food
1 gallon skim milk
1 pint cottage cheese
1 dozen eggs

Bakery
1 loaf whole wheat bread

Produce
Broccoli, 1 bunch
Onions, yellow, 3 lb.
Apples, Jonathan, 5 lb.
Lettuce, 1 head

Frozen
Orange juice concentrate - 4 cans
Corn - 1 large bag.

Make out a shopping list before you shop. It can help you to save money, time, and energy.

Your Shopping List

When you have planned your food selections, make out a shopping list. Check your food stocks in cupboard, refrigerator, and freezer. Add foods you may need, such as milk, flour, and eggs.

Arrange your shopping list in the order in which you shop. One advantage to shopping in the same store regularly is that you become familiar with the layout. Thus you can also arrange your shopping list according to the way the food is organized in the store. For instance, the first aisle may have canned fruits and vegetables, the next baking ingredients, and the next soft drinks. If you organize your shopping list in the order of the store layout, you save yourself needless walking and backtracking.

When you stack items in the cart, keep fragile ones on top so they are not crushed. Select perishables last so they will be out of the refrigerated cases or freezers the least amount of time and will have less chance to lose quality.

Even though you have a shopping list, be flexible. If a certain meat cut is on sale but not on your list, substitute it for the one you originally wanted. Be sure to buy whatever other foods you may need to go with it. For instance, you may have intended to prepare a pork loin roast. However, pot roast is on sale. It's simple to make the



Rice Council

Be flexible as you shop. If stew meat is on sale, you can have a delicious dinner such as beef stew and rice. Don't forget to buy the other foods you will need to prepare the meal.

change in your menu. Buy vegetables such as carrots, potatoes, and onions to cook with the pot roast. Also, remove from your list the vegetables you would have served with the pork loin.

Keep comparable nutrient values in mind. Poultry, fish, cheese, and eggs can be substituted for meat. Greens are interchangeable. So are yellow and deep-green vegetables.

Always take a pen or pencil with you when you shop. You can cross items off your list as you select them or as you make changes.

Save Money When You Shop

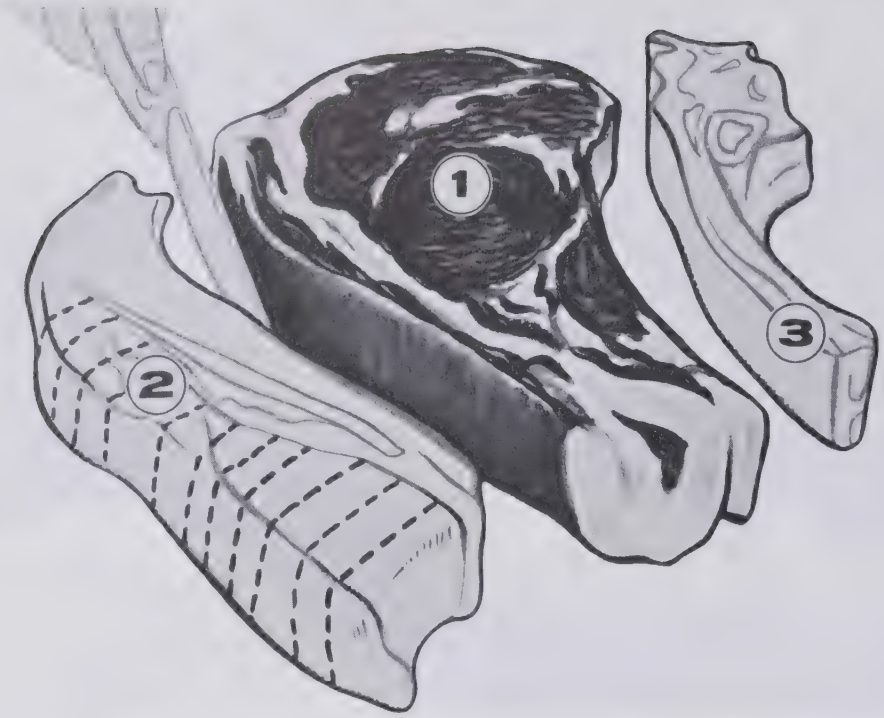
Do not shop when you are hungry. Studies show you will probably buy more than you need and items you cannot use.

If you have time, cook from scratch rather than buy convenience foods. Some convenience foods, however, may be cheaper than the ingredients needed to prepare the dish. Check prices and nutrients to be sure you are making the wisest choice.

Use portion control. Allow a specific size of serving so the food will serve the number of people you have in mind.

If prepackaged foods, such as produce or meat, are more than the quantity you want, ask the clerk to break up the package so you can buy only what you need.

Cut your own meat and other foods. Processing adds to the cost of the food. Large, whole pieces cost less than the same food cut into slices or cubes. To do your own cutting, you will need several sizes of sharp knives, a cutting board, and a small meat saw. A grinder will also come in handy. Here are some ideas for cutting your own food:



Adolph's Jeanette Frank Kitchens

You can divide a blade chuck roast into thirds to make three meals. Piece No. 1 can be tenderized with meat tenderizer and broiled or it can be used for a pot roast. No. 2 can be cut into cubes and used for stewing. Use the remaining piece for hearty soup.

- Shank half of ham. Cut a large portion of shank off for braising with vegetables; cut remaining portion in half lengthwise; roast piece with bone; slice other piece for broiling and casseroles.
- Large blade chuck roast. Divide into thirds; use center for pot roast or tenderize with meat tenderizer and broil; use rounded boneless end for stews; use remaining piece for hearty soup.
- Buy whole poultry and cut into parts.
- Buy slab bacon and slice.
- Cut pork chops from loin roast.
- Grind your own meat from parts of large cuts.
- Buy cheese in one piece and slice or grate it.

Read labels to compare nutrition, grades, and type of food. Give yourself time to make decisions.

Compare prices. Determine cost per serving.

Take advantage of seasonal foods that are priced relatively low.

Keep track of how much you are spending. A small automatic counter can help you keep a tally of the costs.

Use nonfat dry milk. Some families can cut their milk bill in half by using it.

Use extenders such as dried beans and peas, rice, pasta, and vegetables to stretch meat, poultry, fish, dairy products, and eggs.

Do not include non-food items in your food budget, such as soaps and detergents, paper products, and drug items. About 20 percent of supermarket sales are from non-food items.

Your Responsibilities

You, as a consumer, have certain responsibilities when you shop.

Do not mishandle food. Handle produce gently while you make your selections so it will keep its quality for the next person. If you are not sure how a certain brand in a box, bottle, or jar tastes, buy one and try it out at home. Do not open it in the store to sample and then put it back on the shelf if you do not like it. Remember, this type of damage only adds to the price of food.

When you stop to make a food selection, do not block the entire aisle so no one can get past you. Park your cart as close to the shelves as possible and parallel with them.

If you meet a friend and want to have a conversation, select an

open area where other shoppers can maneuver around you. Do not block an aisle, counter, or shelf area.

When you push the shopping cart outside to take your purchases to the car, put the empty cart out of the way of traffic. If you live close to the store, do not use the cart to take groceries home. It is the store's property. If you walk to the store, buy your own grocery cart from a department or discount store.

Unloading at the Checkout Counter

In some supermarkets, the cashier unloads the shopping cart. In others, the customer must unload the cart.

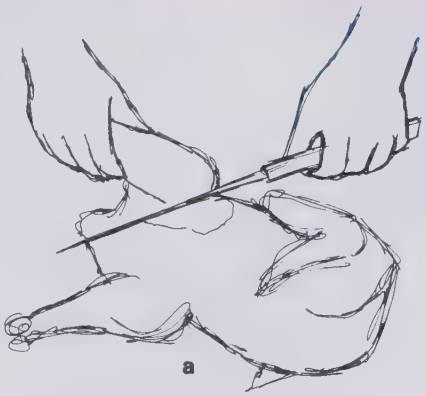
As you unload the food, stack the packages with the price up. This will help the checker see the prices quickly. Otherwise, the checker will have to take time to look for the price on every item.

Once your purchases are checked out, get them home and store them as quickly as possible. A short time in a hot car can cut their shelf life by several days.

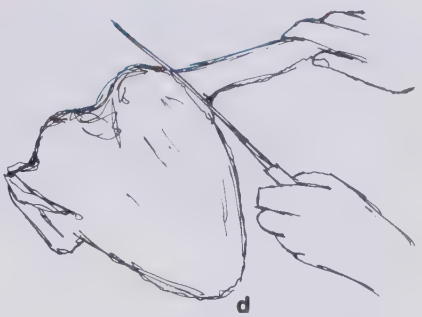
WHEN YOU HAVE COMPLAINTS

Sometimes, no matter how carefully you shop, you may buy poor-quality, inedible food. Prepackaged produce may have spoiled, but you could not see it in the package. Perhaps someone tampered with a jar lid and

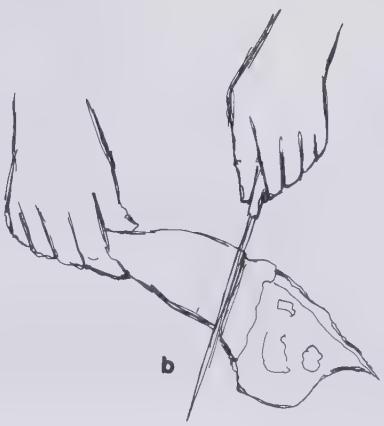
Buy whole poultry and cut into parts . . .



Remove thigh and drumstick from back.



Remove wings.



Separate thigh and drumstick.



Separate remaining lower back from breast.



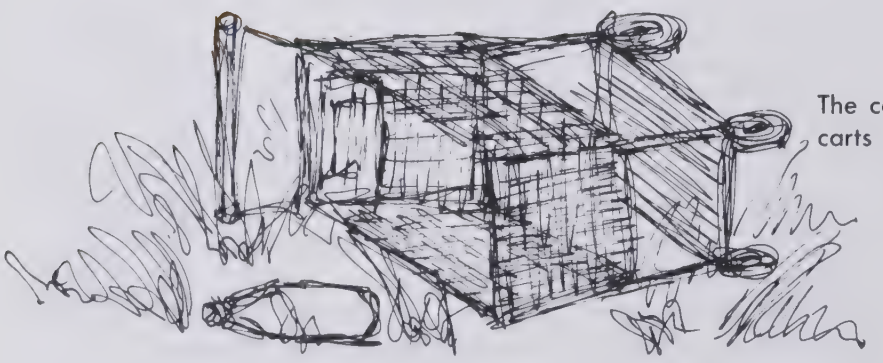
Separate half of lower back from breast.



Split breast.

California Dry Bean Advisory Board

Beans are a nutritious way to extend meat. This casserole of ground meat and beans is topped with corn bread.



The cost of stolen and abandoned shopping carts is added to the price of the food you buy.

you did not realize it until you opened the jar. Prepackaged meat may have an unpleasant odor. You may find foreign particles in packaged foods.

When you have a complaint, return the item to the store immediately. Speak to the manager. If your complaint is legitimate, the manager should replace the product or refund your money.

If you find foreign particles in packaged foods, also report it to the FDA. See page 33 for the procedure to use.

HOW FOOD GETS TO THE MARKETPLACE

The United States has the most complex, efficient food distribution system in the world. Apples from Oregon and Washington, meat from Texas, lettuce from California, and fish from Florida reach markets in San Francisco, Kansas City, and New York, or any other city in the country.

The speed with which food gets to the marketplace depends on the processing it needs. Some foods require little if any handling once they are picked. Others go through complex processing methods.

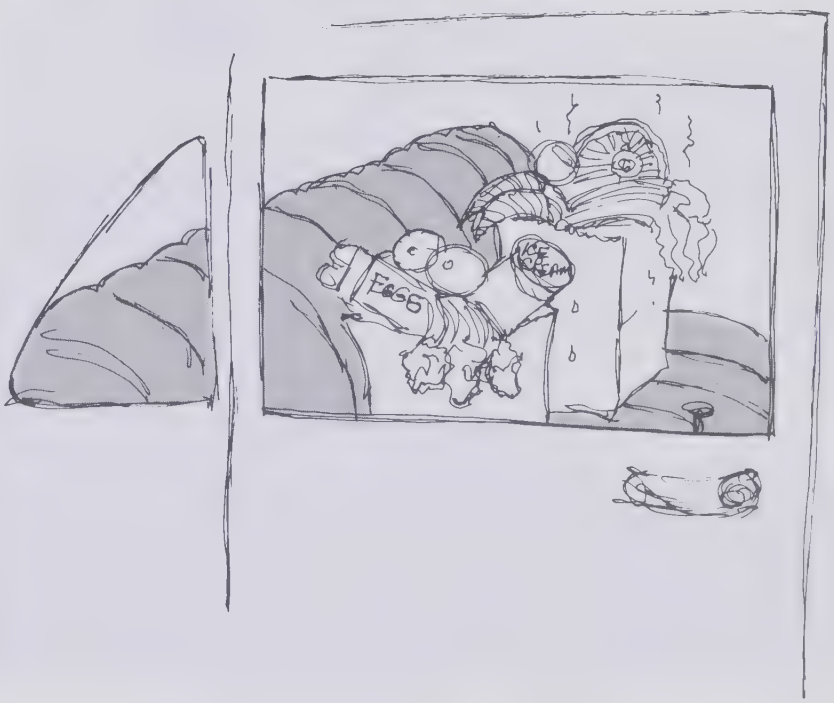
Fresh produce is picked, washed, and cooled immediately, then packed and shipped to its destination. Some foods, such as lettuce and celery, are cleaned and wrapped in the field where they are picked to bring them to market as fresh as possible. Other foods, such as apples and potatoes, are stored for long periods. Modern storage sometimes uses modified atmosphere—a gas mixture much lower in oxygen and higher in carbon dioxide than air. This atmosphere helps some food keep its quality longer.

Meat animals are shipped to meat plants. There, carcasses are processed and eventually reach the retail stores. They are cut into consumer-size portions and usually prepackaged.

Modern technology has developed complex processes for getting food to the consumer. Food may be canned, frozen, dried, or milled and made into grain products. The most common types of processed foods in the marketplace are:

- *Canned foods.* Preserved in air-tight containers by heat processing. Containers may be metal or glass.
- *Frozen foods.* Preserved by freezing very rapidly at low temperatures, usually −25 °C [−10° F.]. Flash freezing, used commercially, freezes food much faster than does the home method. Food is frozen at very low temperatures in a medium such as liquid nitrogen. This keeps bacteria growth to a minimum.

Take your groceries home as soon as possible. A short time in a hot car can ruin the quality of the food.





If you have a complaint about a food you have purchased, return it to the store manager immediately.

• *Freeze-dried foods.* The food is first frozen, then dried under high-vacuum conditions, so only about two percent of original water remains. Such items may be stored without refrigeration. When needed, liquid is added to the product, which is then used the same as fresh food.

• *Dried foods.* Most of the water from food is removed, generally by heated air in a mechanical dryer. Some fruits are sun dried.

Packaging is an essential part of processing. The container must help keep the quality, shape, and texture of the food. Packages include aluminum containers; new lightweight steel cans; food pouches made of laminated combinations of plastic, paper, and foil; flexible films; paper; and plastic containers.

Fresh and processed foods are shipped nationwide to the marketplace. A vast chain of railroads, ships, trucks, and airplanes hauls the food to its destination.

Food producers and distributors make every effort to see that products reach the marketplace in the best possible condition. It is up to you, the consumer, to select the food that meets your needs and to handle it so it maintains its quality. Chapter 11 describes the qualities to look for when selecting food while Chapter 12 gives guidelines for storing.

Let's Explore and Report

• Select a food from the Daily Food Guide. Trace the path it takes to get from the farm to the marketplace. Make a poster showing the different steps in processing this food.

• Make a poster showing the information that *must* be on a food label. Also show information that *may* be on a label.

• Visit a local grocery store. Obtain a drawing of the floor layout from the manager or draw your own. Include the location of different foods. What conclusions do you reach about where different foods are placed?

• Three relatives are visiting your family for the weekend. You have volunteered to help by planning the food selections and doing the shopping. Using the decision-making steps, plan the foods to be served and make up a shopping list. Outline, under the decision-making steps, how you would shop for the food to make the most economical and nutritious selections.

What Would YOU Do?

• You are doing the family food shopping in a supermarket. As you walk down one of the aisles, you suddenly notice one of the customers. She is stuffing several packages of candy into her purse.



American Can Co.
This beverage can has two push-in tabs for quick opening. The tabs are hinged to the can top and remain attached when the can is opened. Since there are no pull tabs to tear off and throw away, this design will help reduce litter.



Whether you shop in a supermarket or a farmers' market, be sure your food choices meet your needs.

Chapter 11

Your Buying Guide to Food

To help you to . . .

- **Identify the kinds of food sold.**
- **Judge the quality of food.**
- **Choose the best food for your needs.**

As you walk into a grocery store to shop, before you is an array of thousands of different food items. How do you know which best meets your needs? Which gives you the best nutrients? The best buy for your money?

General guidelines for buying food were given in Chapter 10. This chapter describes foods in the Daily Food Guide and what to look for when buying them.

MILK GROUP

Look for these terms
homogenized
nonfat milk solids
pasteurized
raw milk

ewel Companies, Inc.
When you shop, you have thousands f items from which to choose. How ill you know which ones to select?

Dairy foods include milk, cream, cheese, and frozen desserts.

According to federal law, all milk and milk products must be *pasteurized*. This means they are heat-treated so all disease-producing bacteria are killed. Pasteurization improves the keeping quality but does not change flavor or food value. When buying dairy products, look for the word "pasteurized" on the labels.

Milk

Milk that is not pasteurized is called *raw milk*. It is dangerous to drink because it may contain bacteria that produce disease. Sometimes a store sells raw milk produced locally.

Fresh whole milk contains 87 percent water and 13 percent solids. The solids include milkfat (sometimes called butterfat) and nonfat milk solids. *Nonfat milk solids* contain most of the proteins, vitamins, minerals, and lactose (milk sugar) found in milk. The more milkfat a product has, the higher its calorie count.

Milk is fortified with vitamin D, as noted on the label.

GRADES FOR MILK

Only Grade A pasteurized milk is shipped interstate for retail sale. The Grade A standard is set by the U.S. Public Health Service. Whole milk must contain not less than 3.5 percent milkfat and not less than 8.25 percent nonfat milk solids. Many state and local governments have similar standards.

WHAT KINDS OF MILK ARE SOLD?

- *Fresh fluid whole milk,* usually homogenized. *Homogenized* means the milk is treated mechanically so milkfat is broken into tiny globules and mixed permanently with the milk. The milk and cream will not separate.



• *Skim or low-fat milk.* From 0.5 to 2 percent milkfat. Vitamin A removed with milkfat. Should be fortified with both vitamins A and D. May also have nonfat milk solids added.

• *Nonfat dry milk.* Made by removing most of the fat and water from pasteurized fluid milk. Has about half the calories of whole milk. Buy product with vitamins A and D added. Mix with water to use as a beverage. Excellent and economical for baking and cooking.

• *Chocolate-flavored milk.* Chocolate-flavored beverage made from whole milk with sugar and chocolate syrup or cocoa added.

• *Chocolate-flavored milk drink.* Same as chocolate-flavored milk but made from skim or partially skimmed milk.

• *Buttermilk.* Pleasant, tangy flavor with smooth, thick texture. To make buttermilk, bacteria which produce lactic acid are added to skim, partially skim, or whole milk. Sometimes flecks of butter are added for flavor and eye appeal.

• *Goat's milk.* Used by people who are allergic to cow's milk or who are on special diets. Sold fresh and canned.

• *Yogurt.* Custard-like product made by fermenting milk with special bacteria culture. Plain or with sugar, fruit flavorings, and fruit. Has same nutrients as milk. Calories can range from 125 to 250 for one cup, depending on whether it is made from whole milk or skim, and how much sugar and other food it contains.

• *Evaporated milk.* Whole milk which has had half of the water removed. Sealed in cans and sterilized. Can be used full strength in place of cream or mixed with water to use as milk.

• *Sweetened condensed milk.* Concentrated milk with at least 40 percent sugar added to help preserve it. Used for infant formulas and in candy and dessert recipes.

Cream

Federal standards set limits on the minimum amount of milkfat for each type of cream. These are:

• *Half-and-half* — homogenized mixture of milk and cream; 10–12 percent milkfat.

• *Light or coffee cream*—18 percent milkfat.

• *Whipping cream*—30–36 percent milkfat.

Cream should have a sweet flavor with thickness and richness depending on the amount of milkfat.

• *Sour cream.* Thick and smooth with mild acid flavor. 18 percent milkfat. Made by adding lactic acid bacteria to light cream. Comes plain or with fruit, blue cheese, horseradish, or other foods added. If cream separates, stir liquid back into it.

Buying Milk and Cream

• Decide on the milkfat content you want. The lower the fat content, the less expensive the product and the lower the calories.

• Consider using nonfat dry milk for cooking and baking.

• Be sure milk is pasteurized and fortified.

Let's Explore and Report

• Make a bulletin board showing the different types of milk sold in your area and the number of calories in a cup of each kind. Indicate whether the product is fortified with vitamins A and D.

• Read the history of pasteurization. How is it used today? What foods besides dairy products are pasteurized? Why?

• Compare the cost per cup of skim milk purchased by the gallon and milk made from nonfat dry milk.

Look for these terms
coldpack cheese
coldpack cheese food
fresh cheese
natural cheese
process cheese
process cheese food
process cheese spread



Institute of Texan Cultures

An imported 114 kg [250-pound] wheel of cheese will be used for fondue during an ethnic festival. Participants are dressed in Swiss costumes.

Cheese

Cheese is a concentrated form of milk. The milk is coagulated. The curd or solid part is separated from the liquid or whey. Most cheeses in the United States are made from cow's milk. Cheese can also be made from milk of other animals, such as goats and sheep.

Cheese comes in two forms:

• Fresh or unripened.

• Natural, also called ripened or cured.

FRESH CHEESE

Fresh cheese is made from pasteurized milk. It has not been allowed to age or ripen. It has a mild flavor, is highly perishable, and must be refrigerated and used within a short time. It includes cottage cheese, cream cheese, and farmer's cheese.

Many countries have their own form of fresh cheese. In Italy, it is Ricotta, in Switzerland, Schabziger, and in France, Fromage de Hollande.

• *Dry cottage cheese.* Fresh cheese with no cream added.

• *Creamed cottage cheese.* Contains a small amount of cream, enough to give up to a 4 percent milkfat content. Fruits or vegetables may be added.

• *Cream cheese.* Soft, with a firm, creamy texture. Made from mixture of cream and milk.

• *Neufchatel.* Similar to cream cheese but lower in fat.

• *Farmer's cheese.* Slightly resembles dry cottage cheese but pressed together. Slices without crumbling.

Fresh cheese can be used in salads, sandwiches, and in baking and cooking.

NATURAL CHEESE

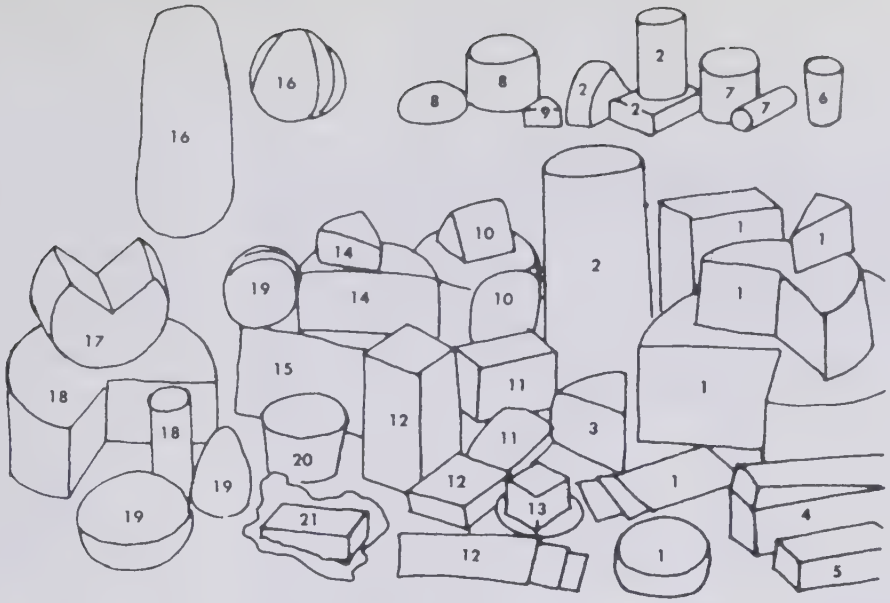
Natural cheese is made by adding bacteria, molds, yeasts, and enzymes to milk. It is also aged or ripened. The kind of cheese and sharpness desired determine aging time. Cheese can age from two weeks for mild brick to as long as two years for extra-sharp Parmesan.

Over 400 types of natural cheese are available. Each type has its own characteristic flavor and texture. Flavors vary from mild to very sharp or strong.



POPULAR AMERICAN-MADE CHEESES

Type	Color, Texture, Flavor	Use
1. Cheddar	Semi-hard cheese ranging from nearly white to yellow in color. Mild to sharp in flavor depending upon aging. In texture, from firm to crumbly.	Appetizers, sandwiches, salads, in cooked foods, desserts.
Cheddar Type		
2. Colby 3. Monterey or Jack	Mild in flavor. In texture, somewhat softer body than Cheddar.	Generally used for sandwiches and appetizers.
4. Pasteurized Process Cheese 5. Cheese Foods 6. Cheese Spreads 7. Cold Pack Cheese Food or Club Cheese	Blend of natural cheeses which have been shredded, mixed. Semi-soft; smooth texture. Spreads easily, melts quickly.	Appetizers, sandwiches, salads, in cooked foods, desserts.



8. Gouda and Edam	Red wax outer surface; yellow interior. Semi-soft to firm. Nut-like flavor.	Appetizers, salads, in cooked foods, desserts.
9. Camembert	Smooth creamy yellow with edible white crust. Soft, surface-ripened. Mild to pungent flavor.	With crackers or fruits for appetizers or desserts.
10. Muenster	Creamy white, semi-soft with tiny holes. Mild to mellow flavor.	Appetizers, sandwiches.
11. Brick	Creamy yellow; semi-soft with small holes. Mild to sharp flavor.	Appetizers, sandwiches, salads, desserts.
12. Swiss	Light yellow, large holes. Firm. Nut-like sweet flavor.	Appetizers, sandwiches, salads, in cooked foods.
13. Limburger	Semi-soft surface ripened cheese. Characteristic strong flavor and aroma. Creamy white interior.	Appetizers or desserts.
14. Blue	Blue-veined, crumbly. Semi-soft to firm. Sharp salty flavor.	Appetizers, salads, salad dressings, in cooked foods, desserts.
15. Gorgonzola	Blue green-veined. Semi-soft to firm. Sharp, salty flavor. Less moisture than Blue.	Appetizers, salads, salad dressings, in cooked foods, desserts.
16. Provolone	Light yellow, semi-hard, smooth and somewhat plastic. Mellow to sharp, smoky flavor.	Appetizers, sandwiches, in cooked foods, desserts.
17. Romano	Yellow-white. Hard, granular (brittle). Sharp, piquant flavor.	Grated in soups, breads, on spaghetti, in cooked foods.
18. Parmesan	Yellow-white. Hard, granular. Sharp piquant flavor.	Grated in soups, breads, on spaghetti, in cooked foods.
19. Mozzarella and Scamorze	Unripened semi-soft cheese. White stretchy cheese—when served hot it becomes chewy. Varying moisture content. Sometimes designated for pizza. Delicate, mild flavor.	Sliced, in cooked foods, on pizza, sandwiches.
20. Cottage Cheese	Soft, mild, white to creamy-white unripened cheese. May be small, medium or large curd. Creamed cottage cheese has added cream.	Appetizers, casseroles, main dishes, cheese cakes, sandwich fillings, salads.
21. Cream Cheese	White unripened cheese. Soft and smooth. Mild, delicately flavored.	Appetizers, sandwiches, salads, in cooked foods, desserts.

United Dairy Industry Assoc.

Textures range from soft to very hard. Production methods, time, and temperature are carefully controlled so flavor and texture are always the same. The only way to decide which you will like is to experiment and taste-test them.

Cheese is made in many shapes and sizes. It can be round, rectangular, or cylindrical, from a few centimeters [inches] to several meters [feet] in diameter. It may weigh about a half kilogram [one pound] or several thousand kilograms [pounds]. Large blocks or wheels are often cut into sizes suitable for consumer use. Next time you are in the grocery store, note the types and sizes of cheese—wedges, oblongs, segments, cubes, slices, blocks, and cut portions.

Some of the more popular cheeses are shown on page 192. A chart describes their flavor and texture and suggests uses.

Natural cheese is processed into a number of cheese products:

- *Pasteurized process cheese.* A blend of fresh and natural cheeses. May contain pimientoes, fruits, vegetables, or other foods. Melts easily and blends well with other foods.
- *Pasteurized process cheese food.* Similar to process cheese but contains less cheese. Nonfat dry milk or whey solids and water added.
- *Pasteurized process cheese spread.* Similar to process cheese food but has more moisture and less milkfat.
- *Coldpack cheese* (club cheese). Fresh and aged natural cheeses blended into uniform product without heating.
- *Coldpack cheese food.* Similar to coldpack cheese but includes other dairy ingredients such as those used in process cheese food.

GRADES FOR CHEESE

Although grades have been established for some cheeses, grade marks usually are not used on retail packages. Some cheddar cheese, however, bears the U.S. Grade AA mark for finest quality or Grade A for good quality. Some cheeses have the USDA "Quality Approved" inspection shield.

WHEN YOU BUY CHEESE

- Decide on the type you want to meet your needs.
- Take time to study the labels to be sure you are getting the exact product you want.
- Buy only what you need. Fresh cheese must be used within a few days, and natural cheese will last only a few weeks in the refrigerator. Do not buy cheese with the idea of freezing it. Cheese does not freeze well—it loses flavor and texture.

Frozen Desserts

Frozen desserts include ice cream, frozen custard, ice milk, sherbet, and water ice.

- *Ice cream.* Made from cream, milk, sugar, flavorings, and stabilizers. Must contain at least 10 percent milkfat. Assorted flavors, some with fruit and nuts.
- *Frozen custard* (French ice cream or custard ice cream). Rich ice cream with egg yolk solids added.
- *Ice milk.* Made from milk, stabilizers, sugar, and flavorings. Must contain between 2 and 7 percent milkfat. Has less total milk solids but more sugar than ice cream. Has about the same number of calories as ice cream. Soft-serve frozen dessert is like ice milk but is processed to be served soft.
- *Fruit sherbet.* Made from milk, fruit or juice, stabilizers, and sugar. Must have 1 to 2 percent milkfat. Has tart flavor. Has more sugar than ice cream.
- *Water ice.* Similar to sherbet but contains no milk solids. About 70 to 75 percent water. Has tart flavor. High in sugar.

GRADES FOR FROZEN DESSERTS

No grades have been established for frozen desserts. Federal and state laws set standards of identity for ice cream and other frozen desserts.

WHEN YOU BUY FROZEN DESSERTS

- Buy only what you can use within a week if you plan to store it in your refrigerator frozen food compartment. If you

store it in a freezer, it will keep for a month or two at −18 °C [0° F.].

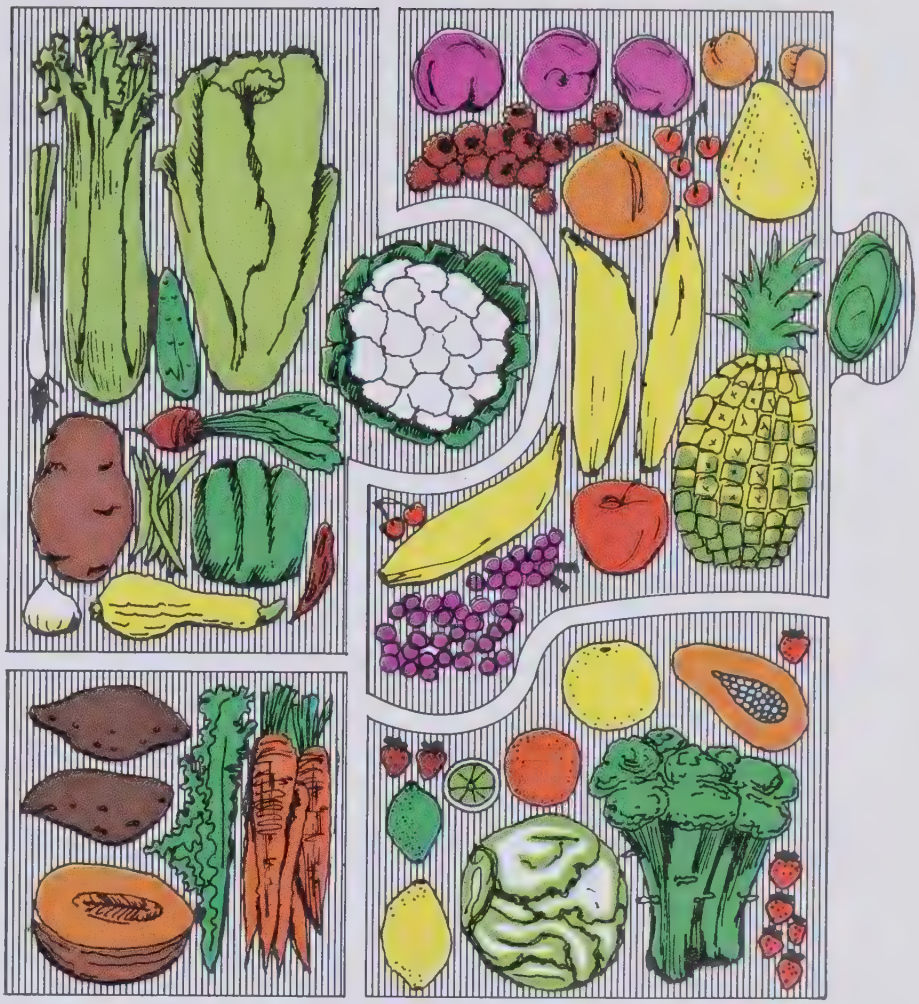
- Feel the packages. Buy only those that are frozen hard. Remember, the product will melt slightly on the trip home.
- Use insulated bags if the store provides them.

Let's Explore and Report

- Select your favorite cheese and trace its history. Make a poster showing historical information, how the cheese is produced, and some uses.

Look for these terms

mature
packaged
produce
ripe
unitized



FRUITS AND VEGETABLES

Which forms of fruits and vegetables are best? Fresh, canned, frozen, or dried? For a well-rounded diet, try to include all forms in your daily food choices. In the winter, however, only limited fresh varieties may be available and may cost more. In that case, you may want to use more processed products.

Fresh Fruits and Vegetables

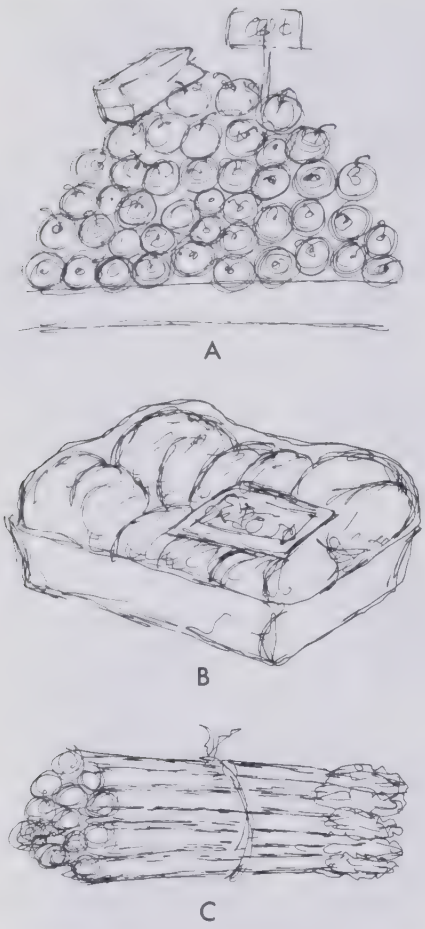
Fresh fruits and vegetables are known as *produce*. In summer months, take advantage of local supplies of fresh fruits and vegetables.

Fruits and vegetables are often sold prepacked—either packaged or unitized. *Packaged* means the produce is contained in a wrapping—plastic bag or a tray or box wrapped in plastic. *Unitized* means several pieces are held together with a flexible plastic tape or rubber band and sold as a unit. They are usually not wrapped in plastic.

Because the produce is prepacked does not mean you have to buy the entire package. If only prepacked produce is available, ask the produce clerk to open the package so you can buy only the amount you need.

FRESH FRUIT

Some fruits, such as peaches and berries, are seasonal and can be purchased only during certain months. Others, such as apples and oranges, are sold during most of the year.



A

B

C

Produce can be purchased (A) loose, (B) packaged, or (C) unitized. If the package contains more than you need, ask the clerk to open it so you can select the quantity you want.

Grades for Fresh Fruit

USDA has established quality grades for most fresh fruits. Keep in mind that the fruit was graded just before packing. Shipping time, temperature, and handling can affect the quality. Thus when you buy the fruit, it may not be the same quality it was when first graded. Therefore use your judgment in selecting fruit rather than depending only on grade.

How to Select Fruit

Fruits have different characteristics when they are *ripe* or ready to eat. Most, if pressed gently, will be soft enough to give slightly under the pressure.

Many fruits are picked when they are mature but still hard or underripe. *Mature* means they have reached their full size. Underripe means they have not yet reached top eating quality.

Underripe fruits can ripen during shipping or while stored in the grocery store. If you buy underripe fruit, you can keep it at room temperature until it is ready to eat. In most fruits, flavors also develop as they ripen because more sugar forms.

Do not confuse underripe fruit with immature ones. Immature fruits are usually small for their size and have poor color, flavor, and texture. They can never ripen after they are picked and are no bargain at any price.

As with all general rules, there are some exceptions. Some fruits are picked only when fully ripe and others when still green.

According to law, citrus fruits must be picked when they are fully mature, ripe, and full flavored—ready to eat. Some oranges, however, experience a phenomenon known as "regreening." In warm weather, chlorophyll, the greening substance in plants, returns to the skins of ripe oranges. Bright lights in the produce department can also cause regreening. Remember—green oranges are fully ripe and have the same sweet flavor as orange-colored ones.

Grapes ripen on the vine and are shipped ready to eat.

Two fruits must be picked before fully ripe—pears and bananas. If pears are tree-ripened, they have poor texture and flavor, so do not buy pears advertised as "tree-ripened." Bananas must be picked green for the long journey from the tropics to the marketplace.

To test fruit for ripeness, press *gently*. If it gives a little, it is soft enough to eat. If you squeeze the fruit too hard, you may bruise it.

When selecting fruit, decide how it will be used. Fruit for eating out of hand should be ripe. If you plan to use it for cooking, firm, slightly underripe fruit is usually best.

When you buy fresh fruit:

- Check for signs of ripeness and freshness.
- Buy those in abundant supply as prices are usually lower during the peak season.
- Buy only what you need and will use during the storage life of the fruit. Most fruits are highly perishable and lose quality quickly.
- Buy only good-quality fruits. Immature, overripe, or



California Tree Fruit Agreement
California Table Grape Comm.

Fresh fruit is available all year. Some, however, such as peaches, plums, and berries, can be purchased only during summer months.

damaged fruit is no bargain at any price. Nutrients have been lost. Flavor and texture are poor, and the fruit will not keep well.

- Handle fruit carefully. Don't pinch or bruise it.
- Take fresh fruits home promptly and store carefully.
- Even if grades are shown on containers, you are the best judge of quality.

FRESH VEGETABLES

As with fruit, summer months bring a bounty of locally grown vegetables to the marketplace. Quality should be at the peak and prices lower.

Remember, color is a key to nutrition. The deeper the color of green and yellow vegetables, the more nutrients present. Most leafy vegetables have darker green outer leaves, with

When buying fresh vegetables . . .



Be sure they are ripe. Squash ripens as flowers bloom on plant to produce more vegetables.



Greens, such as beet greens, should be crisp and free from damage and decay.



Corn must be refrigerated as soon as it is picked or it loses quality. The sugar will begin to turn to starch, causing loss of flavor.

the color lightening toward the center. Select those with the outer leaves in good condition so you can use them. When you trim outer leaves, you throw away valuable nutrients.

Grades for Fresh Vegetables

Very few fresh vegetables in the marketplace carry grades. Even if they do, remember they were graded just after being picked. Handling, temperature, and shipping will affect the quality.

Buying Fresh Vegetables

Vegetables should be at peak of ripeness when you buy them. Most do not ripen in storage. If they are not ripe, they will not have the desired flavor and texture.

Follow these guidelines when buying fresh vegetables:

- Be sure vegetables are fresh. Check color and crispness.
- Handle vegetables with care. They bruise easily.
- Buy only what you need and can store.
- Buy only what you can use during the storage life of the vegetable. Most fresh vegetables should be used within two to five days. Root vegetables will last from one to several weeks.
- Don't buy wilted, decayed, or damaged vegetables, no matter how low the price. They have lost nutrients and will not last long.
- Select vegetables with a good shape. Misshapen ones are usually inferior in flavor and texture.
- Buy the medium size. Extra-large ones may be overripe, coarse, and have poor flavor. Extremely small ones are immature and lack flavor.
- Buy root vegetables, such as carrots and beets, without tops, unless you plan to use them. Tops draw moisture from the roots, causing them to wilt.

Canned and Frozen Fruits and Vegetables

Canned and frozen fruits and vegetables provide an abundant supply of nutritious, ready-to-eat food all year.

CANNED FRUITS

Canned fruits are generally packed in a syrup, which sweetens them. The syrup can be extra heavy, heavy, or light.

Some fruits are packed in water or their own juices, so sugar is not used to sweeten them. Thus the calorie content is similar to the fresh fruit.

Fruits are canned whole, halved, sliced, or in pieces. Whole fruits generally are more expensive than the pieces. This is because they must be handled much more carefully during processing to retain the shape of the fruit.

CANNED VEGETABLES

Vegetables are canned whole, sliced, or in pieces. Whole usually cost more than pieces. Some are packed in sauces, such as Harvard beets.

BUYING CANNED FRUITS AND VEGETABLES

- Do not buy damaged, leaking, rusty, or bulging cans.
- Buy the grade and form—whole, sliced, or pieces—suitable for your needs.



When you buy produce, handle it gently to avoid damaging it.

FROZEN FRUITS AND VEGETABLES

Frozen fruits may be sweetened with sugar. They come in cartons, or plastic bags.

Vegetables usually come in 260–340 g [9–12-ounce] cartons or in large plastic bags varying in size. Vegetables in cartons are usually frozen in a solid block so the whole package must be used. Those in plastic bags are frozen loose. Vegetables are whole or cut. Some are packed in special sauces.

BUYING FROZEN FRUITS AND VEGETABLES

- If you have enough freezer space, the large-size plastic bag can be a good buy. You merely pour out what you need, then refasten the bag with a plastic tie and store in freezer.
- Be sure packages are frozen solid. However, an ice coating on a package is a good indication it has thawed and refrozen.
- Do not buy dirty or damaged packages.

DRIED FRUITS AND VEGETABLES

Some fruits and vegetables are available dried, which means most of the moisture has been removed.

Dried Fruits

The most common dried fruits include raisins, prunes, dates, and apricots. In some areas and at certain times of the year, dried peaches and apples may also be available. Dried fruits make nutritious snacks and are also used for cooking and baking.

Raisins are either dark brown or yellow. Prunes and dates can be purchased with or without pits.

Dried fruits are packaged in boxes, cellophane, or plastic bags. Sometimes they are sold "loose" by the pound.



Michigan Bean Commission

A hearty flavor combination—cheeseburgers topped with heated canned beans.

When buying dried fruit:

- Select fairly soft, pliable fruit.
- Look for good color.
- Avoid hard fruit—it is too dry.

Dried Vegetables

The most common dried vegetables are legumes—mature dried beans, peas, and lentils. Although grades have been established for dried legumes, most usually are not graded.

Types of Dried Legumes

- *Black beans* (*turtle beans*). Used as meat accompaniment and in rich, thick soup. Popular in Latin American, Oriental, and Mediterranean cooking.
- *Black-eyed peas* (*black-eyed beans or cow peas*). Small white beans with black spots. Used as a main-dish vegetable and in casseroles.
- *Garbanzo* (*chickpeas*). Nut-flavored, round. Available canned. Used in salads, soups, or as main-dish vegetable. Called *ceci* in Italy, *garbanzos* in Spanish-speaking countries, and *Bengal gram* in India.
- *Kidney beans.* Large, dark-red with kidney shape. Used in chili, salads, and many

Mexican dishes. In some areas preferred for baked beans.

- *Lima beans (butter beans).* Broad and flat. Come in different sizes. Size does not affect quality. Used as main-dish vegetable and in casseroles. Leftover ham and limas make nutritious soup or casserole.
- *Navy beans (usually includes Great Northern and pea beans).* Small white beans with bland flavor. Used for old-fashioned baked beans. Combine well with many foods.
- *Pinto beans.* Oval with little pink dots. Popular in southwestern states. In Mexico called *frijoles.* Used in salads and chili.
- *Red and pink beans.* More delicate flavor than red beans. Used in many Mexican dishes and chili.
- *Soybeans.* Most nutritious of all beans. Distinct nut-like flavor. Combine well with other foods.
- *Dried peas.* May be yellow or green, whole or split. Green have a more distinct flavor than yellow. Split peas are whole peas with skin removed and split in half. All can be used for similar purposes, depending on personal preference.
- *Lentils.* Size of pea with disc shape. Cook in relatively short time. Combine well with other foods.

Buying Legumes

When you buy legumes, look for:

- *Good color.* Uniform, bright color. Loss of color means lack of freshness and longer cooking time. Eating quality is not affected.
- *Uniform size.* Mixed sizes will cook unevenly. Smaller ones cook faster than larger ones.
- *Visible defects.* Foreign material, cracked coats, small insect holes are signs of low-quality product.

Other Dried Vegetables

Other dried vegetables include chives, mushrooms, onions, parsley flakes, potato flakes and granules, and sweet potatoes. Most of these, such as chives, onions, and parsley, are flavorings. Potatoes are used as a vegetable when prepared according to package directions.

Let's Explore and Report

- Visit a grocery store and write down names of fresh vegetables being sold which are not familiar to you. As a class project, compare all the vegetables listed and select two for a taste-test. Prepare and rate for preference.
- Make a poster of fresh fruits and vegetables grown locally. List the months when they are most plentiful. List quality signs to look for and what to avoid when buying these foods.
- Get the names of dried legumes sold in your area. Look through cookbooks, newspapers, and magazines for recipe ideas using these legumes to stretch meat and other animal proteins.

Look for these terms
durum wheat
gluten
pasta

BREADS AND CEREALS

Breads and cereals include all products made from cereal grains. The major cereal grains used in the United States are wheat, corn, rice, barley, oats, and rye.

A kernel of grain contains the seed of the plant. See illustration on page 89. The outer coat or bran has many nutrients and protects the seed. The endosperm, or inside of the seed, is made up mostly of proteins. The germ, from which the plant would sprout if the seed were planted, is inside the seed and also contains valuable nutrients.

Cereal grains are processed into many products, such as flour, pasta, breakfast cereals, and other foods. During processing, nutrients are lost when the bran and germ are removed from the endosperm. White flour and many breakfast cereals are restored to replace the nutrients lost during processing. White flour, most bakery products, cereals, and pasta shipped across state lines must be enriched according to federal law.



In addition, over 30 states have their own enrichment laws.

Products made from the whole grains retain their nutrients.

Flour

The proteins in flour make up the *gluten*. Gluten is needed to provide the framework for baked products. The gluten in wheat flour is superior to any other.

During processing, white flour is bleached. An unbleached white flour is also sold and is thought by many to be more nutritious. However, there is no difference in the nutritional value of bleached and unbleached flour. Unbleached flour does not give better baking results than bleached. In fact, it may give a coarser product.

Many types of flour are available:

- *All-purpose flour.* A blend of different wheats. Good for general use, baking bread, pastries, biscuits, and most cakes.
- *Cake flour.* Used only for cakes. Gives a finer texture than all-purpose.
- *Presifted.* Does not have to be sifted before measuring. Read label carefully because some brands do not have this quality.
- *Self-rising flour.* Leavening and salt added in right proportion for baking.
- *Granular flour.* Mixes easily with water. Used mainly for making gravies and sauces. Produces relatively lump-free product.
- *Whole wheat flour (also called graham flour).* Contains the whole wheat kernel—bran, germ, and endosperm—finely ground. Distinctive, nut-like flavor. Products have coarse texture.
- *Cracked wheat flour.* Contains whole wheat kernel, cracked.
- *Rye flour.* Whole-grain flour made from rye.
- *Buckwheat flour.* Finely ground flour made from buckwheat. Popular for pancakes.
- *Potato flour.* Made from cooked potatoes which have been dried and ground.
- *Rice flour.* White, starchy flour made from rice.
- *Soy flour.* Made from soybeans. Has distinct flavor. Does not have gluten-forming proteins needed for bread making

so must be combined with white flour for baking.

Flour is usually sold in 2.3, 4.5, and 11.4 kg [5-, 10-, and 25-pound] bags. Some types of flour are available in smaller packages.

When you buy flour:

- Check labels to be sure you are getting the right kind. Many people accidentally purchase self-rising flour instead of all-purpose.
- Flour bags are fragile. Be sure the package is well sealed and does not have splits or holes. If flour comes out of the package, select another one.

Pasta

Pasta includes all macaroni, spaghetti, and noodle products.

Durum wheat is specially grown for use in making pasta. It gives a yellow color and nutty flavor. It also makes harder products which hold their shape and firm texture when cooked. Macaroni and spaghetti are made from processed durum wheat and water. Noodles have egg solids added.

Pasta dough is shaped by machine into different kinds of products. Although there are close to 200 shapes, they can be divided into four general kinds:

- *Hollow pastas.* Long or small, with hollows on the inside. Also flat and curved to form a hollow. Include long, thin macaroni and elbow macaroni. Large hollow pasta often stuffed.
- *Long, thin pastas.* Not hollow inside. Include vermicelli and spaghetti.
- *Flat pasta.* Ribbon-like lengths in different widths. Include noodles, lasagne, linguini.
- *Decorative pastas.* Shapes such as wheels, twists, shells, and alphabets.



National Macaroni Institute

Pasta comes in hundreds of shapes and sizes.

When buying pasta:

- Look for packages with windows so you can examine the product.
- Select whole pasta. Avoid crushed or damaged products. Handle the package gently. Do not put it on the bottom of the shopping cart so it is crushed.



Rice Council

Rice with bacon and chives makes a flavorful accompaniment for any meat.

Rice

Rice is either white or brown. White rice has the hull and germ removed and is polished. It is then enriched to replace the nutrients lost in processing.

Several different types of rice are sold:

- *Long grain.* Cooks dry and fluffy. Favored for eating as a meat accompaniment.
- *Short grain.* Cooks firm and sticky. Used for croquettes, puddings, rice rings.
- *Converted rice (parboiled).* Partly cooked before it is milled so more nutrients from hull enter endosperm. Has more natural nutrients.
- *Precooked rice.* Cooked, rinsed, and dried. Takes only a short time to prepare.
- *Regular rice.* Milled, polished, and enriched. Takes less time to cook than parboiled.
- *Brown rice.* Only the outer hull removed. Has different flavor than white rice. Does not keep as well as polished rice because of oil in the germ.
- *Wild rice.* Technically not a rice. Long, brownish grain of tall water grass grown in marshy lakes, mostly in Minnesota, Wisconsin, Michigan, and Canada. Has crisp nut-like flavor. Extremely expensive because of limited supply.

When buying rice:

- Be sure it is enriched.
- Buy rice that is not broken up into tiny particles.

Breakfast Cereals

Breakfast cereals may be made of whole grains or refined, enriched grains, or a combination of both. Two types of breakfast cereals are available—ready to eat and those that require cooking.

- *Ready-to-eat cereals.* Include puffed, rolled, flaked, granulated, and shredded. May have fruit and other flavorings added. Some coated with sugar or other sweeteners.
- *To-be-cooked cereals.* Require cooking. Some come in regular, quick-cooking, or instant. Usually instant has been precooked and requires only heating.

When buying cereals:

- Compare nutrition information on the labels for the best buy for your money.
- Remember, sugar can cause tooth decay. Sticky, presweetened cereals are no more nutritious than those that are not presweetened.

Other Grain Products

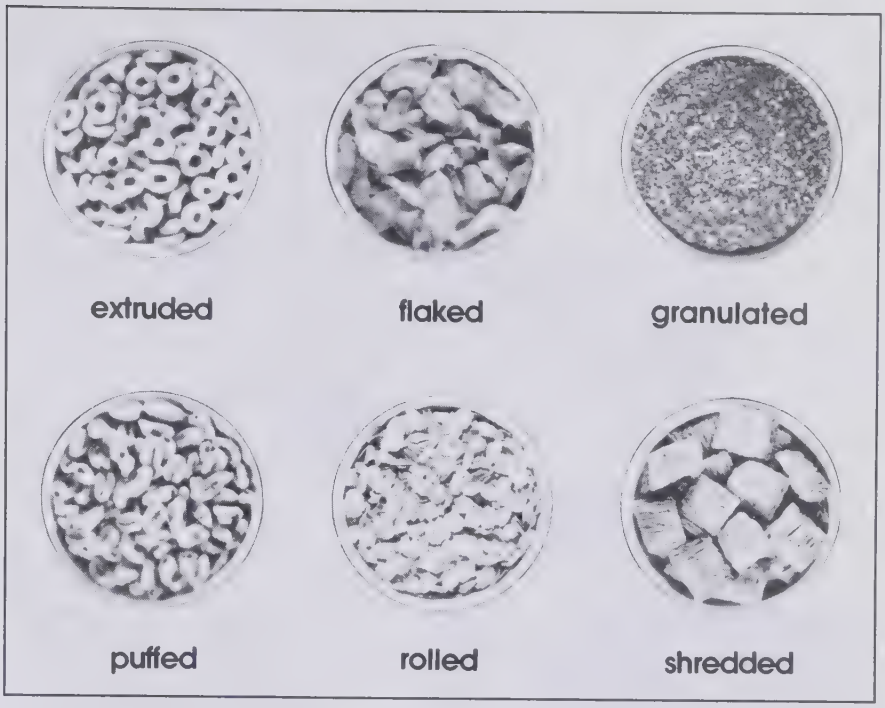
- *Bulgur wheat.* Made of wheat which has been parboiled, dried, and partially debranned. Either cracked or used in whole-grain form. Tastes a little like wild rice. May be used in place of rice. Similar to whole wheat in nutrition.

- *Wheat germ.* Germ of wheat kernel, separated during milling. Sold as a food product. Used as a breakfast cereal or in cooking.
- *Cornmeal.* White or yellow corn, ground to fine texture. Used in baking and cooking. Enriched cornmeal has added vitamins and minerals. Main ingredient in tortillas.
- *Hominy.* Grains of white corn with hulls and germ removed. Sold canned or dry.
- *Grits.* Hulled grains of corn broken up into coarse particles. Pure white. Bland flavor. Used as cereal or side dish for meat in place of rice or potatoes.

Baked Goods

Baked products are available in many forms.

- *Fresh baked.* Ready-to-eat, baked daily.
- *Brown-and-serve.* Commercially pre-baked so they keep shape. Consumer completes baking at home by browning them in oven.
- *Refrigerated.* Rolls, biscuits, and cookies. Sometimes need to be shaped. Must be baked. Found in refrigerated sections of grocery store.
- *Frozen.* Ready-baked need only to be thawed and served. Doughs for breads and rolls, already shaped, need only to be baked. In freezer sections of grocery stores.
- *Crackers, cookies, snack crackers.* Packaged in bags and boxes.



Cereal Institute

Breakfast cereals can be processed into many different forms.

When buying baked products:

- If you keep baked products for several days, look for specials on day-old breads and other baked goods. They will be just as nutritious and you can save money.
- Read labels to be sure products are enriched.
- Look for date on package.

Let's Explore and Report

- Select a grain and prepare a report on how it is milled and enriched.
- Survey the cereal section of a grocery store. How many types of presweetened cereals are offered? How many non-sweetened? On what shelves are the presweetened cereals placed? Why?

MEAT GROUP

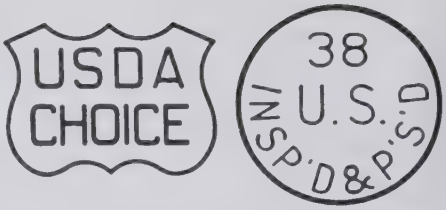
Look for these terms
connective tissue
marbling
USDA grades
variety meats

The meat group includes animal proteins—meat, fish, poultry, and eggs.

Meat

The four main animal meats are beef, veal, lamb, and pork. Meat is made up of the muscle





USDA
Shield shows grade of meat while circle indicates meat has passed federal inspection standards.

portion of the animal, along with some bone, fat, and connective tissue. Fat flecks through meat are known as *marbling*. It helps make meat tender and more flavorful. *Connective tissue* is tough and requires long, slow cooking to make it tender.

MEAT INSPECTION AND GRADING

The Federal Meat Inspection Act requires that all meat shipped across state lines be inspected. Most states and cities have similar laws which apply to meat produced locally and not shipped interstate.

Inspection includes an examination of live animals as well as each carcass. Each stage of processing is supervised. Meat products which pass federal inspection standards are stamped in abbreviated form, "U.S. Inspected and Passed," enclosed in a circle. The stamp also has the official number assigned to the company.

The three top *USDA grades* for beef, veal, and lamb are prime, choice, and good.

- *Prime.* Top grade. Contains greatest degree of marbling. Considered "gourmet" meat. Most sold to restaurants.
- *Choice.* High quality. Has enough marbling but not as much as prime. Most common in supermarkets.
- *Good.* Less expensive. Less marbling and less flavorful than two top grades.
- *U.S. Standard* and *U.S. Commercial.* Lower grades. Not usually sold in retail stores. Nutritious but less tender.

Pork is not sold by grades. The meat comes from young hogs and has fewer variations in eating qualities, so there is no reason to grade it.

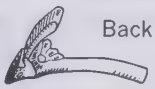
Many packers and stores have their own grade names for meat, usually as a brand name.

The meat grade is stamped on the carcass in a shield. Both inspection and grade stamps are marked with a harmless fluid. It does not have to be cut off the meat before cooking.

WHY IS MEAT AGED?

Aging develops additional tenderness and flavor. It usually

BONES IDENTIFY SEVEN BASIC CUTS

Cut	Bone	Tenderness
Shoulder Arm cuts	 Arm Bone	Not tender.
Shoulder Blade Cuts (Cross Sections of Blade Bone)	 Blade Bone (near neck)  Blade Bone (center cuts)  Blade Bone (near rib)	Only blade bone near rib is tender cut. Others are not.
Rib Cuts	 Back Bone and Rib Bone	Tender.
Short Loin Cuts	 Back Bone (T-Shape) T-Bone	Tender.
Hip (Sirloin) Cuts (Cross Sections of Hip Bone)	 Pin Bone (near short loin)  Flat Bone* (center cuts)  Wedge Bone† (near round)	Tender.
Leg or Round Cuts	 Leg or Round Bone	Lamb, pork, veal tender. Beef usually not tender but may depend on grade.
Breast, or Brisket Cuts	 Breast and Rib Bones	Not tender.

* Formerly part of "double bone" but today the back bone is usually removed leaving only the "flat bone" (sometimes called "pin bone") in the sirloin steak.

† On one side of sirloin steak, this bone may be wedge shaped while on the other side the same bone may be round.

Adapted from the National Live Stock and Meat Board

takes about six to ten days for fresh meat to get from the packer to the consumer. This is enough time for most meat to age and tenderize.

Often, ribs and loins of high-quality beef and lamb are aged beyond the normal time. The meat must have a thick covering of fat so the lean does not discolor or dry out. Most of this meat is used in restaurants.

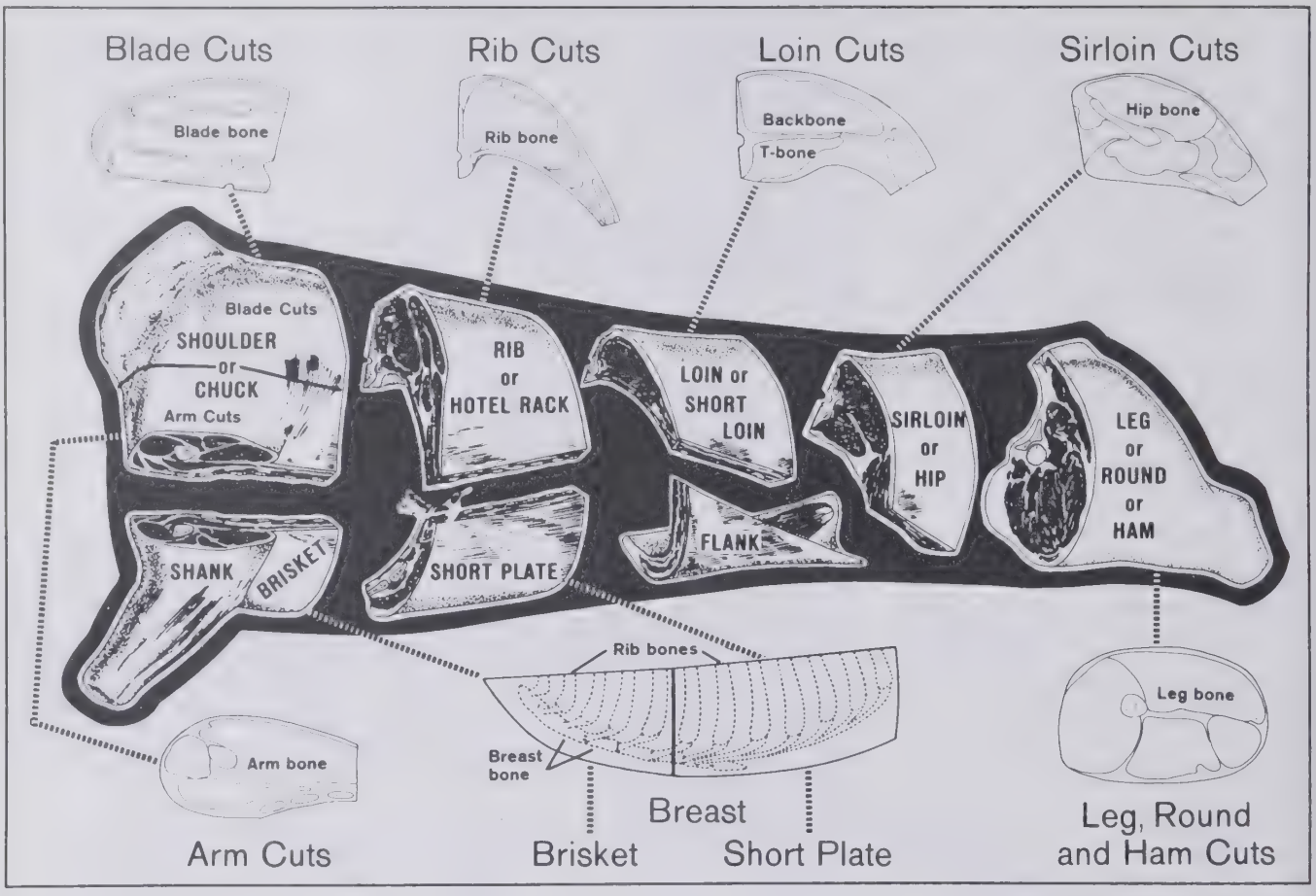
IDENTIFYING MEAT

Many cuts of meat are available, sometimes creating confusion for consumers. How do you know which cut to buy?

Meat can be identified by the shape of the bones. These bones are your clue as to which part of the animal the meat comes from, how tender it is, and how it should be cooked. Tender cuts can be cooked with dry heat. Less tender cuts must be cooked with moist heat.

Look at the chart on this page. Study the bone shapes, the names of the cuts, and degree of tenderness.

The more movement the muscle gets, the more it is developed and the less tender it is. Because the muscles along the backbone get very little movement, meat from that area is



National Live Stock and Meat Board

The seven basic wholesale cuts of meat.

more tender than meat from the shoulders, legs, breasts, and flanks.

The chart on this page shows the seven basic cuts of meat, based on bone shapes.

Most retail food stores have adopted the uniform meat labeling system. As a result, names of cuts do not vary as much from one section of the country to another, as they once did. Approximately 300 standard names are used for meat cuts nationwide.

The meat name follows a standard format, divided into three parts:

- Kind of meat is listed first. This would be beef, veal, pork, or lamb.
- Wholesale cut is listed next, such as chuck, rib, or loin. This tells which part of the animal the cut comes from.
- Retail cut, such as blade roast or loin chops, is listed last. This tells what part of the wholesale cut the meat comes from.

Meat labels show the standard name of the cut. They also give the net weight, the cost per pound, and the total price you must pay.

The charts on pages 210–213 show the retail cuts of meat, where they come from, and how to cook them.

FACTS ABOUT BEEF

Beef comes from mature cattle over one year old. Baby beef comes from animals from 14 to 52 weeks old.

Beef has a distinctive flavor and firm texture. Usually, only beef rib, short loin, and sirloin cuts are considered tender. The others are less tender and need longer and slower cooking in moist heat.

Meat from beef is usually a bright, deep red with creamy white fat.

Ground Beef

Ground beef is often called hamburger, but there is a difference between the two. *Hamburger* is ground beef to which pieces of beef fat may be added while the meat is being ground. *Ground beef* has only the fat originally attached to the lean. The fat limit for either ground beef or hamburger is 30 percent. No water, extenders, or binders are permitted.

Why is prepackaged ground beef often red on the outside and a dull, grayish brown on the inside? When meat is exposed to air, the oxygen causes it to turn red. The interior of the ground beef does not have the red color because there is not enough oxygen. The grayness does not mean there is anything wrong with the meat.

Textured vegetable protein may be added to ground beef as an extender. This must be clearly marked on the label. The meat is lower in price than regular ground beef. It does not shrink as much when cooked, may be juicier, and has fewer calories.

FACTS ABOUT VEAL

Veal comes from immature cattle from four to eight weeks old. These animals are fed on milk or milk products, so the meat is often advertised as "milk-fed veal."

Because the animal is so young, it has little fat. The meat is extremely lean, not too tender, and bland in flavor. Only the rib, loin, sirloin, and leg and arm roasts are tender enough to cook with dry heat. The other cuts should be cooked with moist heat.

Quality veal has a delicate pink color.

FACTS ABOUT LAMB

Lamb comes from young animals up to one year of age. Lamb has a delicate flavor, is tender and nutritious. Meat from older animals is called mutton. It is usually less tender and stronger in flavor.

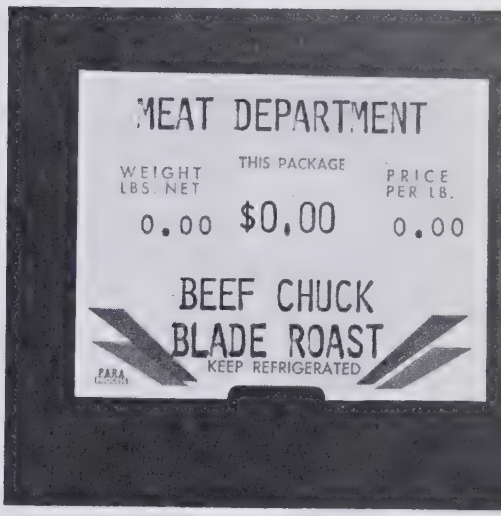
Lamb cuts from the rib, loin, and sirloin, and the leg and shoulder cuts are considered tender. Only the shank, neck slices, and breast cuts are considered less tender.

Lamb is available during all seasons. Some stores offer lamb imported from New Zealand.

Quality lamb is a gray-pink color with white fat. It should be firm and not watery or slimy.

FACTS ABOUT PORK

Pork is meat from swine. Because it comes from young animals between five and seven months of age, pork is usually considered a tender meat.



National Live Stock and Meat Board

Meat label gives the net weight, cost per pound, and the total price you must pay. It also shows the standard name of the cut.

Quality pork is grayish-pink or darker. It is firm with a small amount of marbling.

Pork is available as fresh, cured or pickled, and smoked.

- *Cured.* Product has been treated with curing ingredients such as salt, sodium or potassium nitrate or nitrite, and sugar. These give typical cured flavor and pink color.
- *Smoked.* Product exposed to actual smoke for flavor.

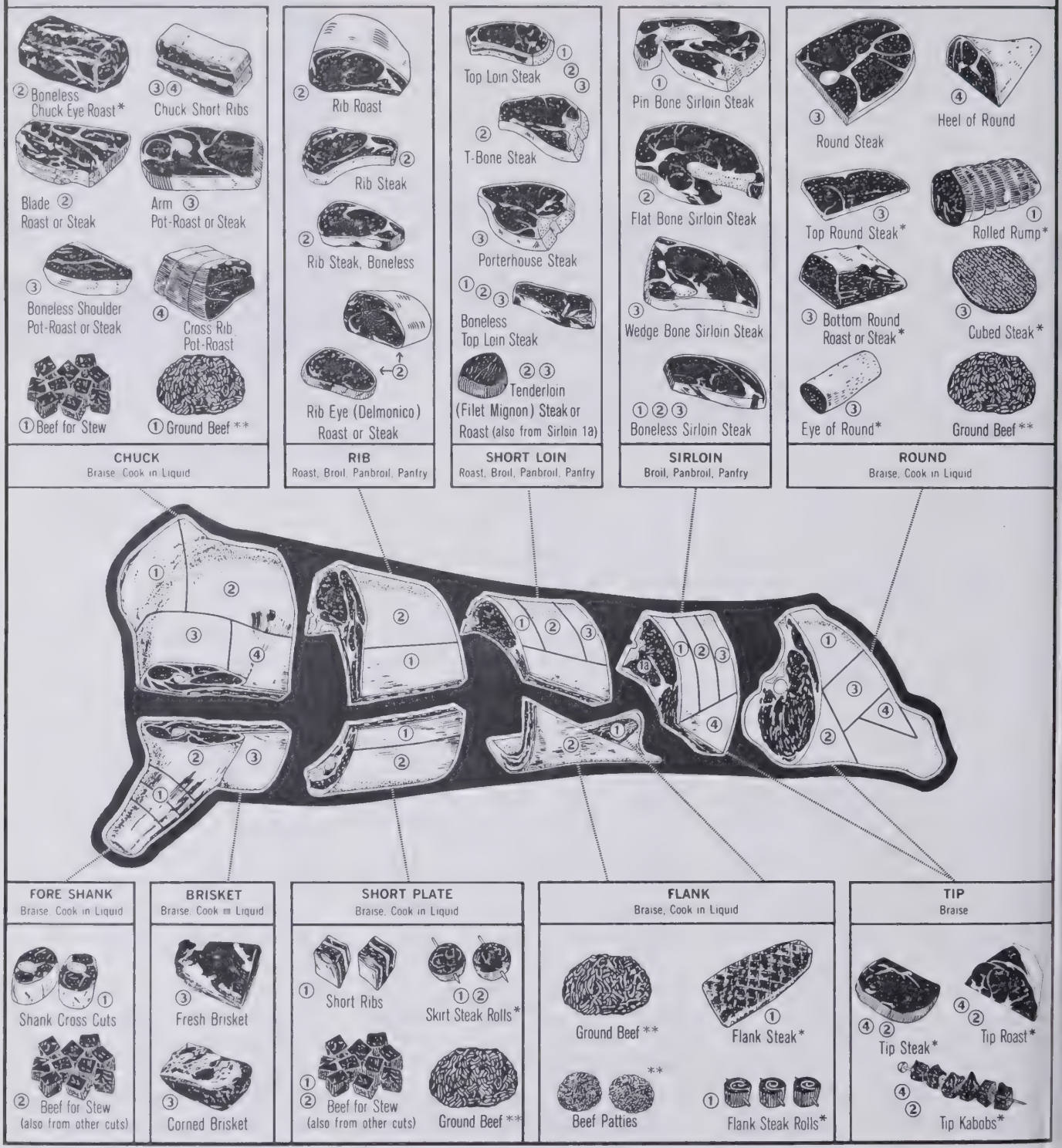
Ham

A cured and usually smoked pork leg is known as ham. There are two kinds of hams—fully cooked and cook-before-eating.

- *Fully Cooked Hams.* Do not require further cooking.

BEEF CHART

RETAIL CUTS OF BEEF — WHERE THEY COME FROM AND HOW TO COOK THEM



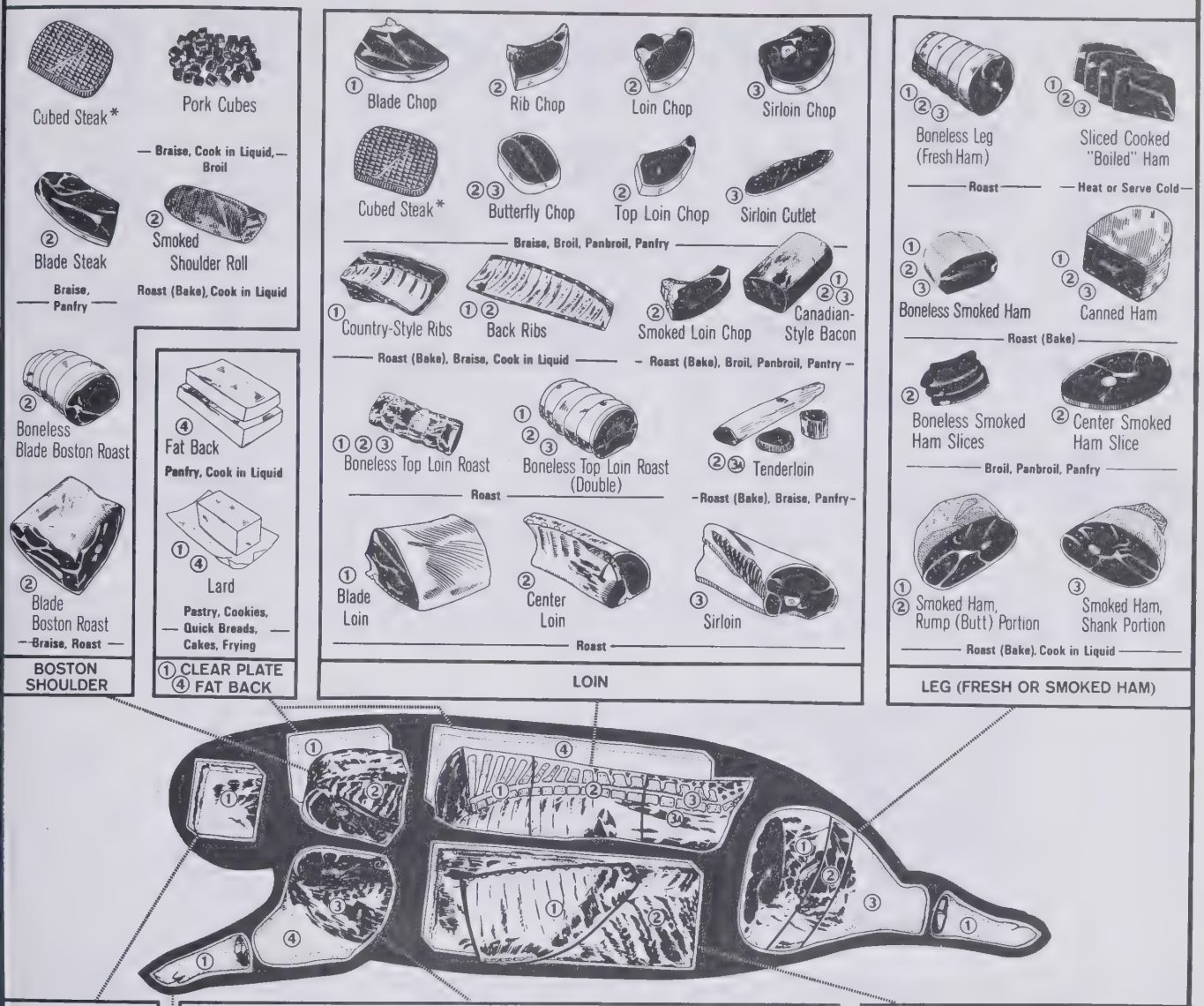
*May be Roasted, Broiled, Panbroiled or Panfried from high quality beef.

**May be Roasted, (Baked), Broiled, Panbroiled or Panfried.

National Live Stock and Meat Board

PORK CHART

RETAIL CUTS OF PORK — WHERE THEY COME FROM AND HOW TO COOK THEM

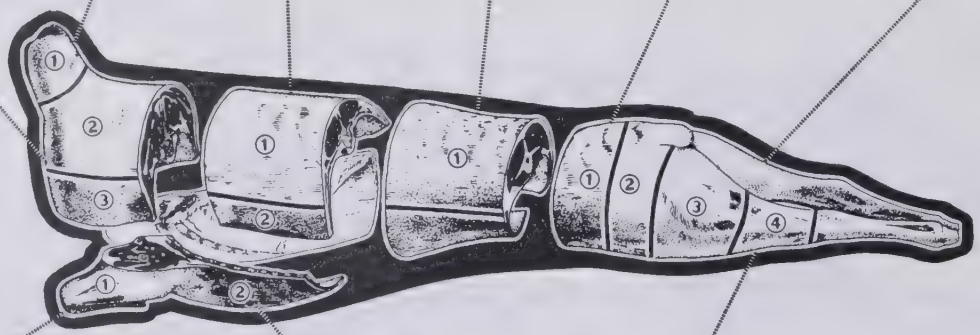


*May be made from Boston Shoulder, Picnic Shoulder, Loin or Leg.

National Live Stock and Meat Board

LAMB CHART

RETAIL CUTS OF LAMB — WHERE THEY COME FROM AND HOW TO COOK THEM



SHOULDER

- Cubes for Kabobs** — Broil
- Boneless Blade Chops (Saratoga)
- Blade Chop
- Boneless Shoulder
- Arm Chop
- Cushion Shoulder — Broil, Panbroil, Panfry
- Square Shoulder — Roast

NECK

- Neck Slices — Braise

RIB

- Frenched Rib Chops
- Rib Chops — Broil, Panbroil, Panfry
- Crown Roast
- Rib Roast — Roast

LOIN

- Loin Chops
- Boneless Double Loin Chop — Broil, Panbroil, Panfry
- Boneless Double Loin Roast
- Loin Roast — Roast

SIRLOIN

- Sirloin Chop — Broil, Panbroil, Panfry
- Boneless Sirloin Roast
- Sirloin Roast — Roast

LEG

- Leg Chop (Steak) — Broil, Panbroil, Panfry
- Combination Leg
- Center Leg
- Rolled Leg
- American Leg
- Sirloin Half of Leg
- Shank Half of Leg
- French-Style Leg
- French-Style Leg, Sirloin Off — Roast

FORE SHANK

- Fore Shank — Braise, Cook in Liquid

BREAST

- Breast — Roast, Braise
- Rolled Breast
- Stuffed Breast — Roast
- Riblets — Braise, Cook in Liquid
- Boneless Riblets
- Spareribs — Braise, Roast (Bake)
- Stuffed Chops — Broil, Panbroil, Panfry

HIND SHANK

- Hind Shank — Braise, Cook in Liquid

GROUND OR CUBED LAMB*

- (Large Pieces) Lamb for Stew* (Small Pieces) — Braise, Cook in Liquid
- Cubed Steak** — Broil, Panbroil, Panfry
- Lamb Patties*
- Ground Lamb* — Roast (Bake)

* Lamb for stew or grinding may be made from any cut.

** Kabobs or cube steaks may be made from any thick solid piece of boneless Lamb

National Live Stock and Meat Board

VEAL CHART

RETAIL CUTS OF VEAL — WHERE THEY COME FROM AND HOW TO COOK THEM

SHOULDER


(Large Pieces)


(Small Pieces)

①②③for Stew*

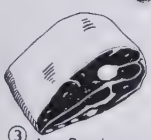
Braise, Cook in Liquid


③ Arm Steak


② Blade Steak

Braise, Panfry


②③ Boneless Shoulder Roast


③ Arm Roast


② Blade Roast

Roast, Braise

RIB


④ Boneless Rib Chop


④ Rib Chop

Braise, Panfry


④ Crown Roast


④ Rib Roast

Roast

LOIN


① Top Loin Chop


① Loin Chop

Braise, Panfry


① Kidney Chop


① Loin Roast

Roast

SIRLOIN


Cubed Steak**


① Sirloin Chop

Braise, Panfry


① Boneless Sirloin Roast


① Sirloin Roast

Roast

ROUND (LEG)


①③④ Cutlets


①③④ Rolled Cutlets


Cutlets (Thin Slices)


③④ Round Steak

Braise, Panfry


② Boneless Rump Roast


② Rump Roast

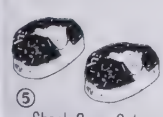

③④ Round Roast

Roast, Braise



SHANK


⑤ Shank


⑤ Shank Cross Cuts

Braise, Cook in Liquid

BREAST


⑥ Breast


⑥ Stuffed Breast

Roast, Braise


⑥ Riblets


⑥ Boneless Riblets


⑥ Stuffed Chops

Braise, Cook in Liquid — Braise, Panfry

VEAL FOR GRINDING OR CUBING


Rolled Cube Steaks**

Braise

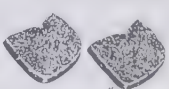

Ground Veal*


Patties*

Roast (Bake) Braise, Panfry


Mock Chicken Legs*


* City Chicken

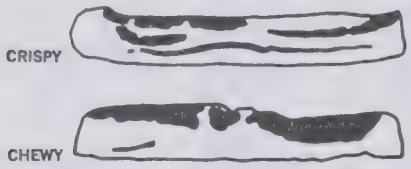

Choplets*

Braise, Panfry

*Veal for stew or grinding may be made from any cut

**Cube steaks may be made from any thick solid piece of boneless veal

National Live Stock and Meat Board



USDA

Do you like bacon chewy or crisp? Slices with the lean concentrated in fewer but larger sections will tend to be more chewy.

May be reheated. Follow label instructions.

- *Cook-Before-Eating Hams.* Require some cooking. Sold with skin on and bone in or skinless and semi-boneless. May be cut in half and sold as shank half and butt half. Sometimes center slices are removed and sold separately, but they are relatively expensive.

Bacon

Pork belly is smoked and made into bacon. It is sold either as a slab or sliced.

- *Slab bacon.* Unsliced bacon belly with rind on, just as it comes from the smokehouse. Sold whole, in chunks, or sometimes sliced by meat retailer to thickness consumer wants.
- *Packaged sliced bacon.* Rind removed. Sliced into uniform slices, thin or thick. USDA requires bacon package to have transparent area at least 4 cm [1½ inches] wide to reveal 70 percent or more of the length of a representative slice. Thick slices are usually chewier than thin ones.
- *Canadian style bacon.* Made from boneless pork loins. Usually sold sliced or in pieces and fully cooked.

VARIETY MEATS

Liver, kidney, heart, tongue, tripe (stomach), sweetbreads (thymus), and brains are variety meats. They are nutritious and usually economical.

SAUSAGE

To make sausage, meat or a combination of meats is finely chopped, minced, or ground, and blended with seasonings and spices. The mixture is stuffed into a casing or container.

Depending on the process, sausage can be fresh, fresh smoked, cooked, cooked smoked, dry and semi-dry, and ready to serve. There are hundreds of varieties of sausage, many of which are characteristic of ethnic groups. For instance, *pepperoni* is a hot Italian sausage, *kielbasa* is a well-seasoned Polish sausage, and *braunschweiger* is German.

BUYING MEAT

Meat is usually one of the highest-priced items in the food budget. When you buy meat, follow these guidelines to get the most for your money.

How Much Meat Should You Buy?

The amount of meat you buy is determined by:

- Number of people to be served and their appetites.
- Number of servings a cut will provide.
- Whether the meat is just for one meal or will also be used for make-overs.
- Amount of storage space you have.

Keep in mind that 85 g [3 ounces] of boneless cooked lean meat is considered an average serving. However, people's needs vary, as explained in Chapters 4 and 6. Thus plan serving sizes to meet nutrition and energy needs.

Different cuts of meat vary in the number of servings they give. This depends on the amount of fat and bone in the cut. As a general rule, use this guide for determining the number of 85 g [3 ounce] servings you can expect:

- *Lean, boneless.* Allow 115 to 140 g [¼ to ⅓ pound] per serving.
- *Fat, boneless.* Allow 140 to 230 g [⅓ to ½ pound] per serving.
- *Small bone.* Allow 230 g [½ pound] per serving.
- *Bony (spareribs, short ribs, lamb riblets).* Allow 340 to 454 g [¾ to 1 pound] per serving.

PRICE PER SERVING

The price per serving is more important than just the price per pound. Figuring the price per serving *before you buy* can help you keep a tighter control of your food budget.

Bony meat is usually priced lower than boneless cuts and may appear to be a better buy. If you compare prices with the number of servings from each, you may find that the more expensive boneless cut is actually the better buy. For example, 454 g [1 pound] of ground chuck at $1.19 can serve three people—price per serving: 40 cents. On the other hand, 454 g [1 pound] of T-bone steak, when bone and fat are removed, gives only two 85 g [3-ounce] portions. If it sells for $2.19, each portion costs $1.10. Of course, bony meat is often priced low enough to make it a good buy.

If you stretch meat with a vegetable or grain, you can lower the price per serving. For instance, 454 g [1 pound] of boneless ham will make four servings. If made into a casserole with lima beans, it can serve six and supply an excellent combination of amino acids. Lima beans are fairly inexpensive, so the cost per serving of the casserole is lower than a meal made from the ham alone.

When Buying Meat

- Look for good color.
- Estimate the number of servings in the cut.
- Estimate price per serving.
- Decide whether the cut will provide for more than one meal.
- Compare different cuts that can be used for the same purpose.
- Avoid drippy or partially opened packages.



National Marine Fisheries Service

The National Marine Fisheries Service provides an inspection program for the fish industry. Grades have been set for some fish products.

Let's Explore and Report

- Make a meat identification poster. Draw the seven basic bone shapes. Underneath list representative cuts of beef, lamb, pork, and veal, and how each can be cooked.
- Get prices on several types of boneless lean, boneless with fat, small bone, and bony meats. Determine price per serving. Make a comparison chart, beginning with the lowest price per serving.

Look for these terms

fish
National Marine Fisheries Service
shellfish
wing-tag

Fish and Shellfish

Fish are creatures which live in water. They have fins and a center spine with bones. *Shellfish* are water creatures with a shell.

Fish and shellfish are nutritious, wholesome, and appetizing. However, they retain their natural goodness and quality only if they have been properly handled from the time they were caught to the time you cook them.

GRADING FISH AND SHELLFISH

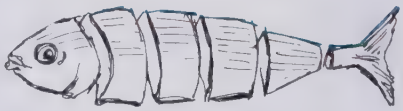
The *National Marine Fisheries Service* provides an inspection program for the fish industry. The Service is part of the National Oceanic and Atmospheric Administration, an agency of the U.S. Department of Commerce. Inspection is available for all processed fish products—fresh, frozen, canned, and cured. Such products carry the round seal of inspection.

Grade standards have been established for some fish prod-

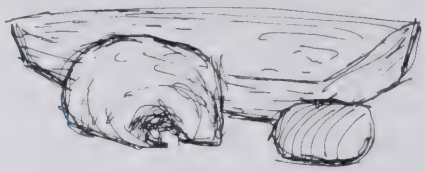
Fish can be bought in many different forms . . .



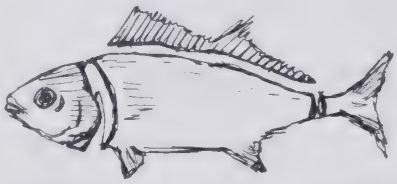
Whole. Fish just as it is caught. Scales must be removed, insides must be taken out. Head, tail, and fins may be cut off. *Drawn.* Fish has been cleaned on inside only. You must scale it and cut off fins.



Steaks. Slices of fish about 1.9 to 2.5 cm [¾ to 1 inch] thick, cut across the fish. A part of the backbone is in the steak. Ready to cook.



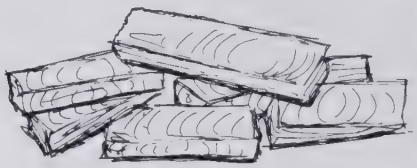
Chunks. Pieces of fish cut across the fish. Larger than steaks. Ready to cook.



Dressed. Fish has been cleaned and scaled. Usually, head, tail, and fins are cut off.



Fillet. Sides of fish cut away from backbone. Usually boneless and ready to cook.



Portions and sticks. Cut from blocks of frozen fillets. Covered with a batter. Follow package instructions for cooking.

ucts. Graded products may bear a U.S. grade shield, which shows their quality level.

FISH

Many types of fish are sold. Usually, you can substitute one type of white fish for another.

Each fish has a distinctive flavor and color. Some fish are leaner than others. Lean fish, low in fat and high in protein, include tuna, halibut, cod, flounder, haddock, pollock, mullet, ocean perch, turbot, carp, and whiting.

Prices vary widely according to season, region, and species. Some fish are seasonally plentiful only in certain areas.

You can buy fish in many different forms. Some are ready to cook while others need more cleaning.

Buying Fish

The form will determine the number of servings you get:

- Whole—454 g [1 pound] serves 1.
- Dressed—454 g [1 pound] serves 2.
- Steaks, fillets, portions—454 g [1 pound] serves 3.
- Sticks—454 g [1 pound] serves 4.
- Canned—454 g [1 pound] serves 6.

When buying fresh fish, look for:

- Firm flesh.
- Fresh and mild smell.
- Bright, clear, round eyes.
- Red gills, no slime.
- Shiny, bright-colored skin.
- Fillets, steaks, and chunks should have cut edges that look fresh, firm, and clean.

When buying frozen fish, look for:

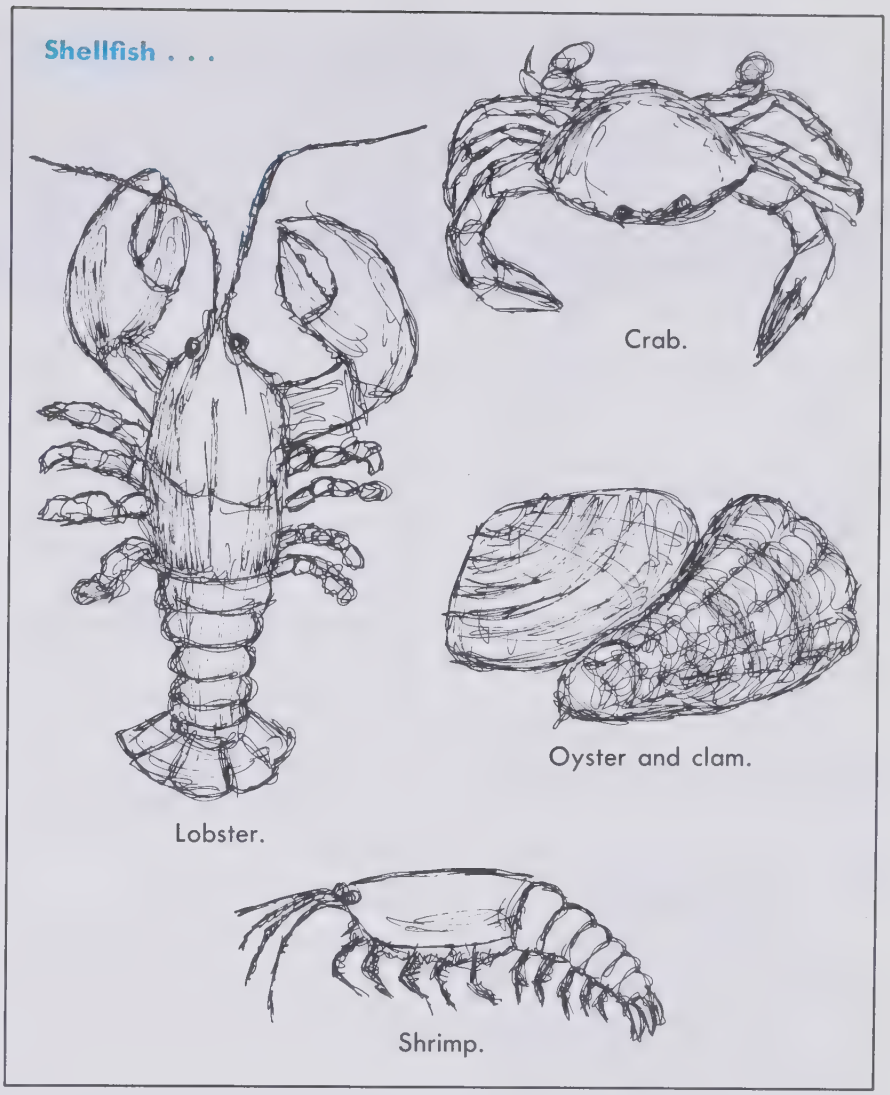
- Frozen solid.
- Little or no smell.
- Wrapped tightly so air cannot get in.
- Good color; no discoloration.

SHELLFISH

Shellfish include clams, oysters, lobsters, crabs, scallops,

and shrimp. All shellfish are lean and low in calories.

- *Clams.* Can be purchased live in the shell, shucked, (without shell) frozen, and canned. If live, examine closely. Shells should be tightly closed. With some varieties, the neck will twitch when touched. Shucked clams should be plump, with clear liquor or liquid free from shell pieces.
- *Oysters.* Vary in size, texture, and flavor according to where they come from. Sold live in shell, shucked, frozen, and canned. If live, shell should be tightly closed.
- *Lobsters.* Live ones can be purchased in seafood stores. Also available canned and frozen.
- *Crabs.* Dungeness from Pacific, King crab from Alaska, blue crab from Atlantic. Soft-shell crabs have shed their hard shells. Sold live, cooked in shell, fresh, frozen, or canned.
- *Scallops.* Small Bay scallops or large scallops. Sweet, firm, white meat.
- *Shrimp.* Fresh, frozen, or cooked tail section of the shrimp. Sold headless, peeled, and deveined; cooked in the shell; ready to eat; and breaded.



Poultry

Poultry includes chicken, turkey, duck, and goose.

GRADES FOR POULTRY

Before poultry can be graded for quality, it must be federally inspected for wholesomeness. Frequently, the inspection mark and the grade shield are displayed together on a *wing-tag*—a tag attached to the wing of the bird.

- *Grade A.* Highest grade. Bird fully fleshed and meaty, attractive in appearance.
- *Grade B.* Less attractive in appearance and slightly lacking in meatiness. You will seldom find grade B on poultry labels.

SELECTING POULTRY

The grade does not tell you how tender the bird is. The best way to select poultry is by age—young birds are more tender than older ones.

Usually the label will carry a description of the maturity of



Florida Dept. of Citrus

An eye-catching appetizer—shrimp and grapefruit sections served in grapefruit shells.

the birds. Young birds are tender and best for barbecuing, frying, broiling, and roasting. They will be labeled:

- *Chickens.* Young chicken, Rock Cornish game hen, broiler, fryer, roaster, or capon.
- *Turkeys.* Young turkey, fryer-roaster, young hen, or young tom.
- *Ducks.* Duckling, young duckling, broiler duckling, fryer duckling, or roaster duckling.

Mature, less tender birds are used for stewing, baking, soups, or salads. They are usually labeled:

- *Chickens.* Mature chicken, old chicken, hen, stewing chicken, or fowl.
- *Turkeys.* Mature turkey, yearling turkey, or old turkey.
- *Ducks and geese.* Mature or old.

Chickens

Chickens can be purchased fresh chilled or frozen. They can be bought whole, cut in halves, or parts only. When buying, compare the price with the amount of meat. Some parts, such as breasts, have more meat than others, such as backs.

The breast of chicken is light meat, tender and mild in flavor. The rest of the chicken is dark meat, with a little stronger flavor and more firm texture.

Allow 454 g [1 pound] per serving.

Turkeys

Turkeys can be purchased fresh chilled or frozen. They come in the following forms: whole, pre-stuffed, boneless rolls, and parts.

Allow 454 g [1 pound] per serving. If you want leftovers, allow 680 to 900 g [1½ to 2 pounds] per serving.

Ducks

Ducks usually weigh from 1.6 to 2.7 kg [3½ to 6 pounds]. Duck meat is all dark, and is tender and flavorful.

Duck has a great deal of fat so it has less meat in proportion to weight than do chicken and turkey. Allow about 680 g [1½ pounds] per serving.

Geese

Geese usually weigh from 1.8 to 4.5 kg [4 to 10 pounds]. The meat is all dark and high in fat. Allow 454 to 680 g [1 to 1½ pounds] per serving.

BUYING POULTRY

- Look for the class name to determine whether it is an old or young bird.
- Look for grade as a sign of quality.
- If fresh, should have clear, bright color; avoid discoloration.
- If frozen, should be hard.
- If you do not want a whole turkey, consider buying parts for just one meal.

Eggs

Eggs are sold by grade and size. In some areas, eggs are available with brown shells as well as white.

GRADES FOR EGGS

Eggs have three grades: AA or Fresh Fancy, A, and B.

- *Grade AA (Fresh Fancy).* When the egg is broken, it covers a small area. The white is thick and stands high. The yolk is firm and high. This is the highest quality egg you can buy. Especially good when appearance is important, such as poaching and frying whole.
- *Grade A.* Broken egg covers a moderate area. White is reasonably thick, stands fairly high. The yolk is firm and high. Use when appearance is important such as poaching or frying.
- *Grade B.* White and yolk are thin. Good for general cooking and baking and when appearance is not important.

The grade is shown in a shield either on the egg carton or on the tape sealing the carton.

SIZES OF EGGS

Egg size refers to the minimum weight per dozen. The size of the egg has no relation to quality. Large eggs may be available in Grades AA, A, and B. Grade AA eggs may be large or small. *The price of the egg depends on the supply of various sizes and not on the egg size.* Occasionally, you may find larger sizes priced the same as smaller ones. This is especially true if a store carries more than one brand.

The most common sizes are:

Size	Minimum Weight Per Dozen
Extra large	765 g [27 oz.]
Large	680 g [24 oz.]
Medium	595 g [21 oz.]

Other sizes sometimes available are:

Jumbo	850 g [30 oz.]
Small	510 g [18 oz.]
Peewee	425 g [15 oz.]

BUYING EGGS

When buying eggs, look for:

- Refrigerated cases so eggs are kept cold.
- Whole, clean eggs with no cracks--open carton if possible.
- Best price relating to grade and size.



INSPECTION MARK — Assurance of wholesomeness

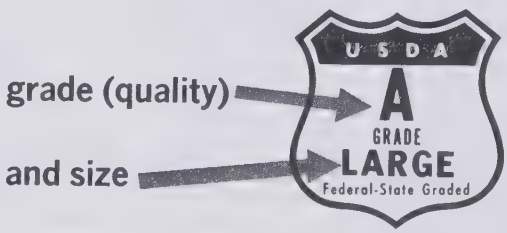
GRADE MARK — Assurance of quality

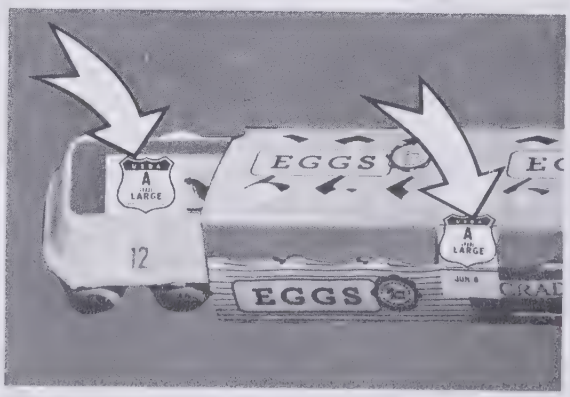
USDA

The inspection mark and grade for poultry are often shown on the wing tag.

The shield shows the grade for eggs. It appears on the egg carton or on the tape sealing the carton.

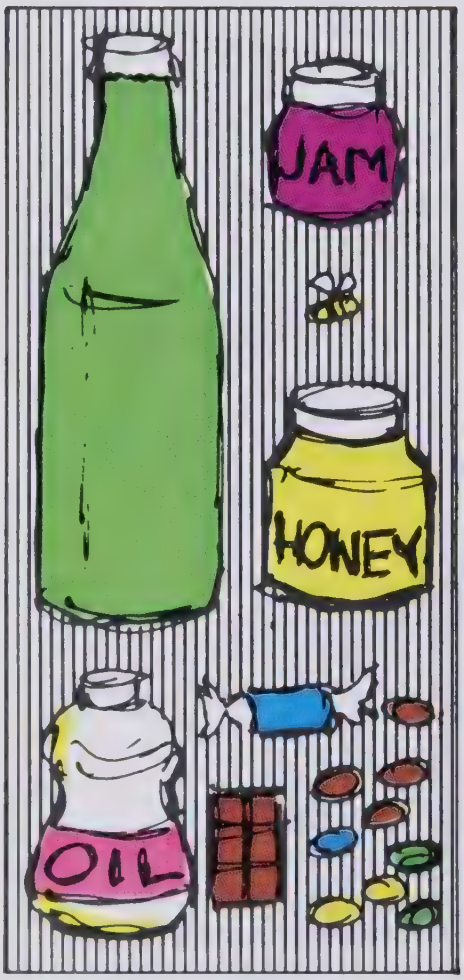
USDA







General Mills, Inc.
Select Grade AA eggs when appearance is important.



- Size and grade suitable for needs.
- Avoid cracked eggs, even if the contents are not leaking. They may be contaminated and can cause illness.

FATS, OILS, AND SWEETENERS

Fats and Oils

The most common fats and oils are butter, margarine, lard, shortening, and salad and cooking oils.

- *Butter.* Fat from cream, separated during the churning process. Usually slightly salted but can also be purchased non-salted or sweet. Used as a spread on bread and in cooking and baking. Perishable. Grades AA, A, and B. Grade B made from sour cream and preferred by many for its flavor.
- *Margarine.* Made from vegetable oils and colored yellow. Comes in regular hardness or in a soft form in tubs. Used as a spread for bread and in cooking and baking.
- *Lard.* Solid fat from hogs. Sold in carton or can. Used in cooking and baking.
- *Shortening.* Hydrogenated vegetable oil. White. Used primarily in cooking and baking. Sold in cans.
- *Oils.* Olive, cottonseed, corn, soybean, peanut, and safflower. Olive oil common in some ethnic cooking. Oils may be used for salad dressings and cooking. Usually sold in bottles or cans.

Sweeteners

Sweeteners include sugar, honey, molasses, and artificial sweeteners.

- *Sugar.* White table sugar or sucrose. Sold as fine granules or cubes. Made from sugar cane or sugar beets. *Brown sugar* is the same as table sugar with the added flavor and color of mo-

lasses. *Powdered or confectioner's sugar* is regular sugar finely ground to a powder. *"Raw"* sugar, as sold in health stores, is a refined sugar colored and flavored with a little molasses. FDA prohibits sale of real raw sugar because it still contains contaminants such as soil, fibers, molds, yeasts, bacteria, lint, and waxes.

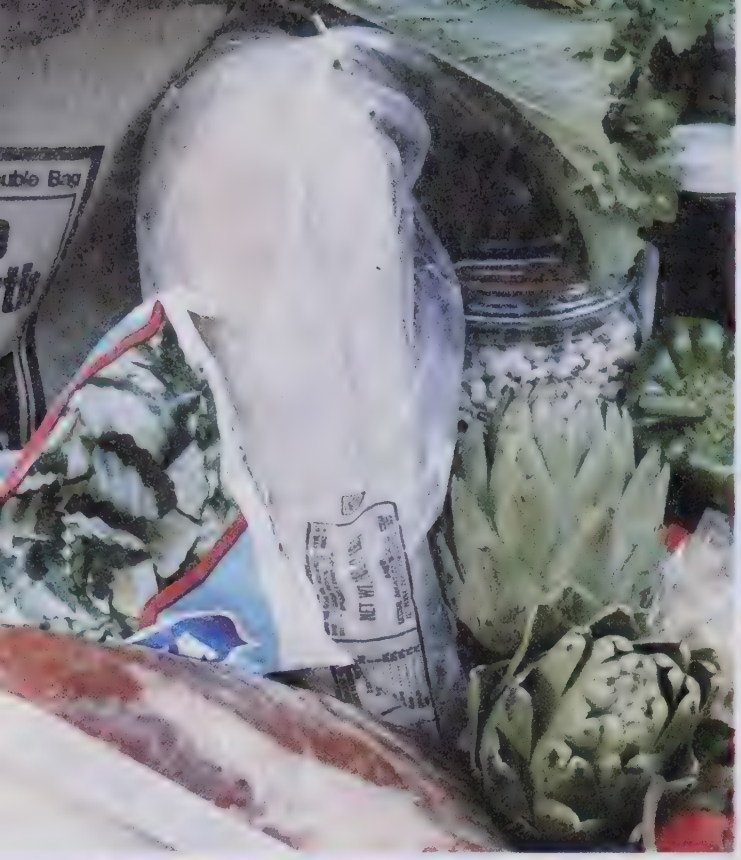
- *Honey.* Produced by bees from nectar in flowers. Contains fructose and glucose. Often available in different flavors, depending on the types of flowers from which nectar came. Has distinct flavor. Can be used as a syrup or as an ingredient in cooking.
- *Molasses.* By-product of refining of cane sugar. Whether it is dark or light depends on the manufacturing process. Used in cooking and may be used as a syrup. Has an unusual, distinctive flavor.
- *Corn syrup.* A solution of dextrose in water. Used mainly in cooking. Helps prevent formation of undesirable crystals in candymaking.
- *Artificial sweeteners.* Low calorie. Sold as powder, tablets, or liquid.

Let's Explore and Report

- Make a survey of the different kinds of fish sold in your area.
- Get prices for whole fryer chicken, chicken thighs, whole turkey, turkey roll, duck, and goose. Determine the price per serving. Make a chart, beginning with lowest price per serving.
- Outline the basic features to look for when buying:
  - Milk
  - Fresh fruits
  - Fresh vegetables
  - Fresh meat
  - Fresh fish
  - Poultry
  - Frozen food
  - Canned food
  - Cereal
  - Flour

What Would YOU Do?

- You are visiting at the home of a friend. Your friend's mother mentions that, whenever possible, she tries to buy only steaks and chops rather than other cuts of meat even though they cost more. She believes they are the best meats available.


uble Bag







Chapter 12
How To Store Food

To help you to . . .

- **Understand why food must be properly stored.**
- **Identify the different kinds of food storage.**
- **Store each type of food correctly.**

The way you store food determines how long it keeps its nutrients and quality. If you do not store food properly, it will spoil and be unfit to use.

Look for these terms
bacteria
enzymes
inventory
microorganisms
molds
toxins
yeasts

WHY MUST FOOD BE STORED?

Food must be stored properly to:

- Keep it dry or moist.
- Keep out dirt, dust, insects, and other pests.
- Protect it from heat, light, and moisture.
- Keep it at the right temperature to prevent microorganisms from growing.

Proper storage helps keep the nutrients, flavor, texture, and appearance of food. Spoiled food is not only a waste of money, but if you have to replace it, you may find yourself spending more than your budget allows. Spoiled food can also cause illness.

As soon as you come home from a shopping trip, take time to store the food. Store frozen foods first and then those needing refrigeration. The remaining foods can be stored last. Prompt storage will help keep the quality of your purchases.

Rubbermaid
Food should be stored properly as soon as it is brought home.

WHAT CAUSES FOOD TO SPOIL?

Microorganisms—enzymes, bacteria, yeasts, and molds—cause food to spoil. *Microorganisms* are small organisms that can be seen only through a microscope. Not all microorganisms are harmful. Many are beneficial. Some are used in food production. Yeast, for instance, makes bread rise, molds give some cheeses their flavor and texture, and bacteria are used in making buttermilk, cheese, and yogurt. Enzymes are used as meat tenderizers.

All microorganisms need certain conditions under which to grow. They need moisture and food and most need warm temperatures. They cannot move around by themselves but are carried by people, animals, and insects, and on objects.

- *Enzymes* are chemical substances that speed up chemical changes, especially in fruits and vegetables. Fruits discolor and become overripe. Vegetables lose color and flavor and become tough.
- *Bacteria* are microscopic organisms. They prefer protein foods, such as milk, eggs, poultry, fish, shellfish, and meat. They also like rich foods, such as cream pies; custards; ham, fish, poultry, and potato salads;

rich sauces and gravies; and stuffings. Bacteria give off waste products known as *toxins*. Many of these are poisonous and can cause illness and even death if eaten.

Bacteria multiply rapidly by dividing in half. In five hours, one can multiply into 33,000. One of the reasons for storing food at cold temperatures is to keep bacteria from multiplying. The more harmful bacteria in a food, the greater the chance for illness.

- *Molds* are microscopic plants that live on food. They come in different colors—pink, green, blue, white, and black—depending on the kind of mold. They grow as a fuzzy patch on bread, cheese, vegetables, and fruits. Some like cold temperatures, so in time mold will even grow on refrigerated food if it has been stored too long. Moldy foods usually have an unpleasant odor and flavor. Some molds are beneficial. Molds, for instance, give Blue and Roquefort cheeses their characteristic flavor.
- *Yeasts* are small plants that can cause some foods to ferment. They multiply by sending out buds.

Microorganisms generally live best in temperatures from 4 °C to 74 °C [40° F. to 165°F.]. For this reason, most fresh foods should not be kept at room temperatures. Leftover cooked foods should be refrigerated immediately.

Cold stops microorganisms from growing but does not kill them. Because of this, frozen foods can be stored in the freezer for only a limited time. Cooking temperatures above 70 °C [160° F.] destroy microorganisms. The higher the temperature, the faster the microorganisms are killed.

Foods must be stored at right temperatures to prevent microorganisms from spoiling them, and to preserve the nutrients. Storing foods properly also keeps out insects, mice, and other pests.

KINDS OF FOOD STORAGE

There are three types of food storage—dry, refrigerator, and freezer.

Dry Shelf Storage

Foods which are not considered highly perishable may be stored on shelves in a dry, cool area. These foods include cereals and cereal products, sweeteners, oils, seasonings, and unopened cans and jars. Some unopened cans and jars must be refrigerated. These are kept in refrigerated cases in stores.

A dry, cool area can be kitchen cabinets, kitchen pantry, hall cupboards, or a clean area in the basement. The temperature should be cool, but not freezing, preferably between 13 °C to 21 °C [55° F. to 70° F.]. Do not use kitchen cabinets above the refrigerator, range, or near a radiator or furnace outlet for food storage. Inside temperatures will be too warm and the food will lose quality rapidly. These cabinets can be used for storing dishes and utensils.

Never use the area under the sink for storing food because openings around water and drain pipes are impossible to seal. Food will attract insects and rodents through these openings. Also, the pipes may leak and damage the food. Cans, for instance, may become rusty or overheated. Use the under-sink area for storing dishwashing and cleaning supplies.

Cleanliness is essential in the storage area. The area should be free of dirt, insects, and rodents. If food such as flour or sugar spills, wipe it up immediately so it does not attract pests. Clean the area regularly.

If you have problems with insects or rodents, buy a "safe-to-use" insecticide or pesticide. Use it carefully, following package directions exactly. Usually, it will be necessary to remove all the food from the cabinet. Before putting the food back, wash the interior of the cabinet to remove any traces of the poison.

CONTAINERS FOR DRY STORAGE

Food in the dry storage area may be kept in the original container. However, once the containers are opened, they some-

times cannot be closed securely. In that case, it is best to put the food in a clean, air-tight container so it will not dry out or moisture will not get in. You can use glass jars or plastic containers. Be sure they have tight-fitting lids.

If you reuse glass jars such as jelly, peanut butter, or pickle jars, wash them thoroughly first. Wash the lid well, too, so it does not carry the aroma of the food originally in the jar. Wipe the jar and lid and then let them air dry thoroughly before using. This helps to remove any traces of odors that may remain.

Refrigerator Storage

A refrigerator provides cold temperatures for storing perishable foods, such as dairy products, meat, fish, poultry, eggs, fruits, and vegetables.

The temperatures inside the refrigerator should be between 0 °C and 7 °C [32° F. and 45° F.] to provide the best cold storage. However, temperatures within the refrigerator will vary—some parts will be colder than others. Shelves on the refrigerator door, for instance, are usually not as cold as the interior.

Use a refrigerator thermometer to check the temperature of the refrigerator. If it is not cold enough, adjust the temperature controls. Remember, food will not keep its quality or nutrients if temperatures are too warm or too cold. Also use the thermometer to find out which part of the refrigerator is the coldest.

Protein foods should be stored in the coldest part of the refrigerator. Fruits and vegetables can be stored in less cold sections or in special compartments such as the crisper.

Do not use the refrigerator for storing food for long periods of time. Few foods will hold up more than a week. Most should be used before then.

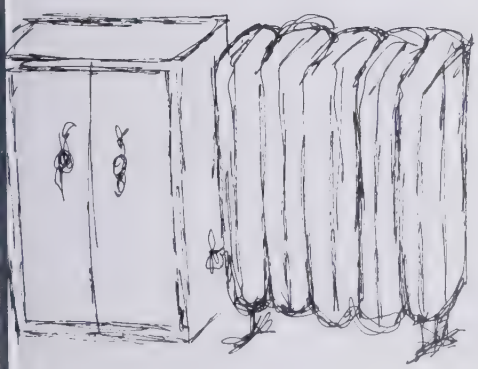
Do not cover the shelves with foil or any other material to keep them clean. Air must circulate in the refrigerator, and any covering you put on the shelves interferes with the circulation.

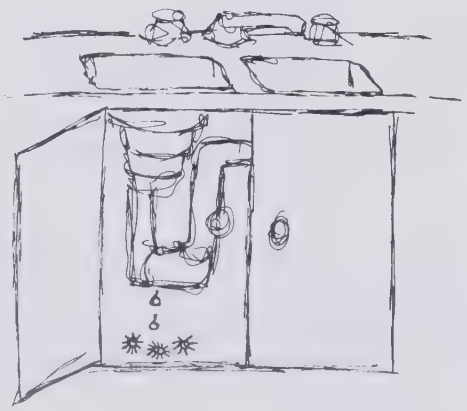
WRAPPING FOOD FOR REFRIGERATION

If refrigerated foods are not properly wrapped, they will dry out and lose nutrients and flavor. Food should be well covered with plastic, foil, or wax paper, or should be put in a tightly covered container. This also prevents aromas from transferring from one food to another. Food with strong odors, such as garlic-flavored sausage, should be wrapped



Tell why food should not be stored next to a radiator or furnace outlet, under a sink, or above a range.









United Dairy Industry Assoc.
The mashed potatoes used to "frost" the meat loaf were prepared ahead of time and stored properly in the refrigerator until needed.

tightly in plastic or foil or stored separately in an air-tight container.

If you are storing ready-to-eat foods for quick meals, list them on a sheet of paper. Include the date and number of servings for each. A helpful idea is to attach the list to the refrigerator door with masking tape. Tie a pencil to the door handle. Ask family members to deduct one serving from the total each time they help themselves to the food. By doing this, they will help you to keep track of how much food you have left in the refrigerator. This way you can buy or prepare more food before you run out completely.

Freezer Storage

For proper freezing and storage, the temperature inside the freezer should be −18 °C [0° F.] or lower.

A one-door refrigerator with a frozen food compartment inside was not designed for freezing food. It is not cold enough. At best, already-frozen foods will keep in this type of compartment for two weeks or less.

A combination freezer-refrigerator with a separate outside door for each usually has a temperature of −18 °C [0° F.] in the freezer. It can be used for freezing fresh food and for long-term storing of already frozen food. Whatever type of freezer you have, check the temperature with a thermometer. Be sure it is cold enough to freeze food and keep it frozen.

CONTAINERS FOR FREEZING FOOD

Store-bought frozen foods should be stored in their original packages. Foods to be frozen should be put in moisture-vapor-proof wrapping or containers. This includes:

- Wrapping paper coated with plastic.
- Heavy-duty aluminum foil.
- Heavy-duty plastic wrap.
- Heavy-duty freezer bags.
- Freezer cartons coated with plastic.
- Plastic containers with tight-fitting lids.

If wrapping is used, wrap the food tightly and squeeze out as much air as possible. If you are freezing several hamburgers or chops in one package, put waxed paper between them. You can separate them easily for use while they are still frozen. Use freezer tape to seal the package airtight.

If plastic containers are used, allow about 2.5 cm [1 inch] of head space at the top between the food and the lid so the food can expand when it freezes. Without head space, the food will force the lid off the container.

Thaw frozen foods in the refrigerator. If you do not have time, cook the food frozen. Do not allow food to thaw at room temperature. Microorganisms will begin to grow on the surface as soon as it begins to thaw.



When packaging food for the refrigerator or freezer, be sure to label the packages properly. Include the date and the type of food and quantity.

LABELING FROZEN FOOD PACKAGES

Label all packages and containers with the name of the food. Include whether the food is raw or cooked, portion size, and date. For instance, packages of cooked chicken may be labeled, "Stewed chicken, 1 cup, May 16."

If you have a vertical freezer, label packages and containers on the side so you can see them as you open the door. If you have a chest-type freezer, label packages and containers on the top.

FREEZER INVENTORY

Food service managers must keep a record or *inventory* of all the food they have in storage. This helps them to avoid waste and to control costs. Keeping a food inventory at home is practical and helpful, too.

An inventory of your freezer will let you know at a glance what food items you have, how much of each, and how long they have been in the freezer. To make an inventory, simply list the date, food item, package size, and number of packages. Each time you remove a package, cross off the number, deduct one, and write in the new quantity remaining in the freezer.

An inventory is even more helpful if you arrange it according to the way the food is stored in the freezer. See the sample on page 228. For a vertical freezer,

Date	Food	Amount
10/5	Orange Juice	6 5 4
10/3	Canned Tomatoes	½ c
9/18	Beef Vegetable Soup (2c.)	2 3 2 2 21 19 18
9/15	Stuffed Peppers	10 9 8 7
10/2	Turkey – 3 oz. White Meat	21 20 19 18 17 16 15
	Dark Meat	15 14 13 12
10/30	Hamburger Patties	12 11 10
11/30	Lamb Stew – 1c	8
8/15	Blueberry Sauce – 1c	15 14 13 12 11 10
11/18	Cranberry Bread	2
11/15	Frozen Duck	2

An inventory sheet for a vertical freezer. How would the inventory sheet look for a chest-type freezer?

divide a sheet of paper according to the number of shelves. Write in the date, food, package size, and number of packages in the shelf area where the food is stored. With a chest-type freezer, divide the sheet of paper according to the way you have the food arranged. Tape the inventory to the freezer door or lid.

Before you open the freezer, check the inventory to see exactly where the food you want is located. This will help to save fuel. When you open the door, you won't waste time and fuel searching for the package—you will know right where it is. Remember, warm air rushes in whenever you open the freezer door. If you open and shut the door quickly, only a small amount of warm air enters. Therefore only a small amount of fuel is needed to bring the temperature back down to the right level.

Let's Explore and Report

- Research the kinds of insecticides and pesticides that can be used safely in the home. Make up a poster showing how they are to be used. Include safety precautions.
- List the different kinds of containers that can be used in dry, refrigerated, and freezer storage.

STORING FOOD

Following are some specific guidelines for storing foods.

These are classified according to the basic food groups—milk products, fruits and vegetables, cereal products, meats and other animal proteins, and fats, oils, and sweeteners.

Rotate the Stock

Always use up food you have on hand before opening a new package of the same type of food. To do this, store new purchases behind old ones and always use the first package. Write the purchase date on the packages to keep them from getting mixed up. It is easy to put new purchases at the front of the shelves. However, this way older packages are overlooked and the food deteriorates.

All Canned Food

Keep unopened cans of fruits, vegetables, milk, and fish in a dry storage area. Usually, canned foods will keep their flavor for a year or so. If stored for longer periods or at warmer temperatures, they may still be safe to eat but may not be top quality.

Unused portions in open cans should be stored in the refrigerator. They will keep only for a few days.

Read labels on canned meats before storing. Some may have to be refrigerated even though unopened.

All Frozen Food

Frozen food stored in ice cube compartments of refrigerators will keep only a few days. Foods stored in freezers at temperatures of −18 °C [0° F.] or below will keep for longer periods.

If you use only a portion of a frozen package, be sure the remainder is sealed tightly before you return it to the freezer. Store the unused protion before it has a chance to thaw.

Milk Products

MILK AND CREAM

Milk and cream are highly perishable. A container should not be allowed to remain unrefrigerated for even a short time as bacteria will begin to grow. Store milk in original containers in coldest part of refrigerator.

When using milk or cream, pour out what you need and return the container to the refrigerator immediately. Do not allow container to sit in warm room for any length of time.

Milk and cream are sensitive to odors. Keep containers closed so odors from other foods are not absorbed. If milk or cream has an off-flavor, it means one of two things—it has either picked up nearby flavors or is starting to go sour.

If milk has accidentally frozen, it can still be used. Freezing does not change the food value, but it may affect the appearance and flavor. If the container has popped open from the pressure, it is best not to use the milk since it has been exposed to bacteria.



Keep milk away from light. Milk is a good source of riboflavin, but light destroys this vitamin.

Use milk and cream within three to five days.

DRY MILK

Keep in cool, dry place. Once opened, reseal the package carefully. Moisture in air may cause dry milk to cake. Unopened packages can be kept for several months without re-

frigeration. Dry milk mixed with water should be refrigerated the same as fluid milk.

YOGURT

Refrigerate in coldest part. Yogurt should keep about ten days or longer. If it separates, stir liquid back in or pour it off—the yogurt is still edible.

CHEESE

Fresh cheese is highly perishable. Refrigerate and use within a few days.

Natural cheese keeps best in the refrigerator. If possible, store the cheese in its original wrapper. Otherwise, wrap it in plastic or foil to keep from drying out. Cheese with strong odor should be stored in air-tight wrapping or container so other food flavors are not affected.

Soft natural cheese such as Camembert should be used within a week or so because it continues to ripen in the refrigerator. If kept too long, it may develop an undesirable flavor.

Hard natural cheese such as Cheddar and Swiss may keep up to several months if wrapped well to prevent drying.

Mold may develop on some hard cheeses such as Cheddar, Swiss, or Brick. It can be scraped off. However, the mold sometimes gives the cheese an unpleasant flavor.

If a piece of cheese has dried out and becomes too hard to eat, grate it. Store in tightly covered jar and use for cooking.

Freezing Cheese

Cheese is best stored in the refrigerator. When frozen, fresh cheese separates. Natural cheese becomes crumbly and mealy.

Certain varieties of natural cheese may be frozen if they are in small pieces such as 454 g [1 pound] or less and not more than 2.5 cm [1 inch] thick. These include Brick, Cheddar, Edam, Gouda, Muenster, Port du Salut, Swiss, Provolone, Mozzarella, and Camembert. Smaller pieces of Blue, Roquefort, and Gorgonzola may be frozen for use in salads or where a crumbly texture is acceptable.

To freeze cheese, wrap it tightly in vapor-moisture-proof wrapping. Freeze immediately.

Frozen cheese begins to lose flavor and texture after the first six weeks of storage. Plan to use it as soon as possible. Cheese which has been frozen is best used for cooking. Thaw frozen cheese in the refrigerator.

FROZEN DESSERTS

Ice cream should be kept hard-frozen to prevent it from becoming icy. If it softens and is refrozen, large ice crystals form.

Put frozen desserts in the freezer as soon as you arrive home. Along with other frozen foods, they should be the first products from your shopping bag to be stored.

Frozen desserts will keep only about a week in a refrigerator frozen food compartment.

Fresh Fruits

Handle gently. Citrus fruits can be kept at room temperature but will last longer if refrigerated. Keep in covered crisper or in plastic bags. They should keep about two or three weeks refrigerated. Cut fruit should be wrapped in plastic or foil to prevent drying. Do not freeze whole citrus fruit. As the fruit freezes, the juice sacs burst. When it thaws, the pulp will be dry, the peel mushy.

Most non-citrus fruits and melons, except for grapes and berries, may be ripened at room temperature, 19 °C to 27 °C [65° F. to 80° F.]. When ripe, they should be refrigerated.

Grapes are shipped ripe, ready-to-eat. Refrigerate at once and use as soon as possible.

Berries should be covered and refrigerated.

Except for berries and cherries, wash fruit thoroughly. Dry well before storing.

Sort berries and cherries; place in original basket or shallow bowl in crisper or on shelf. Wash just before serving.

Store cut fruits and those with strong aromas, such as cantaloupe, in air-tight containers or tightly wrapped in foil or plastic.

Fresh Vegetables

Except for potatoes, sweet potatoes, and dry onions, vegetables are highly perishable. They should be refrigerated as soon as you bring them home.

Wash only if needed. Then wash quickly and shake out excess water. Soaking can carry off water-soluble nutrients.

Core head lettuce before storing. Hold the head with both hands, bottom side down. Hit bottom hard against counter top or any other flat surface. Core will loosen and can be removed easily with your fingers. Run cold water into the hole, turn head over, and let drain. Store in container or plastic bag. Leaves will be ready to use as needed.

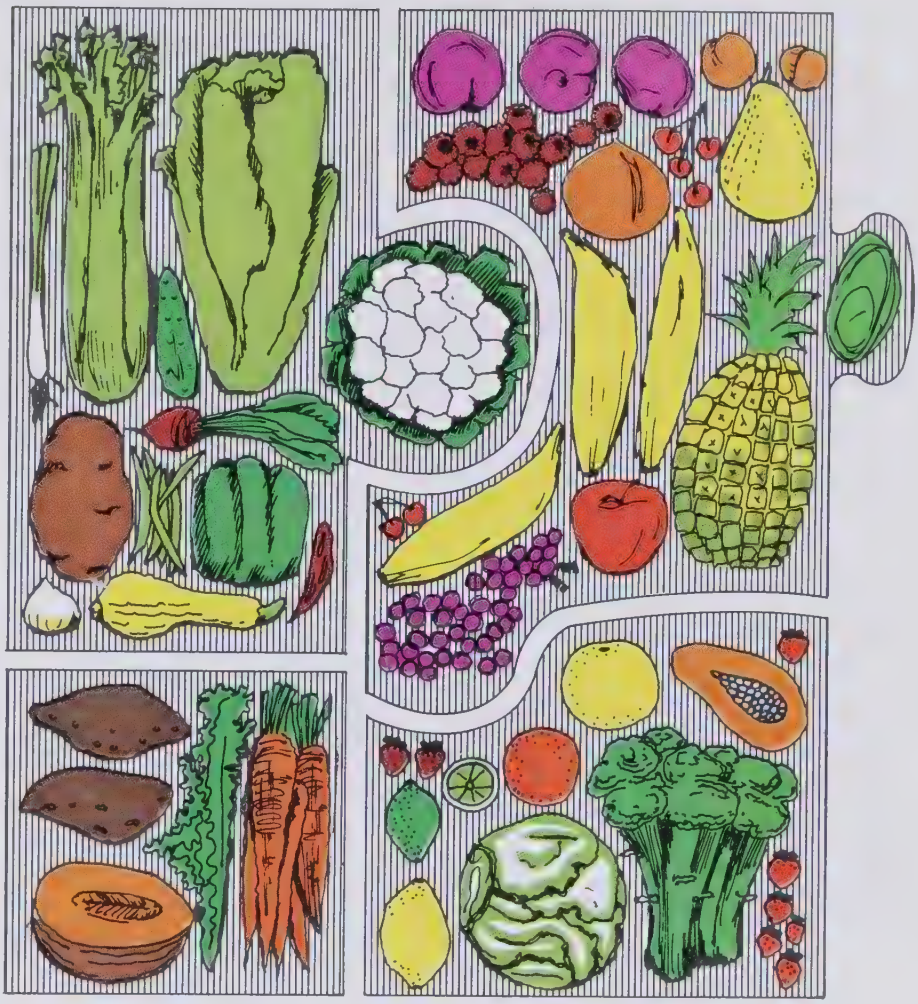
Store vegetables in the crisper or in plastic bags. Be sure they are covered to prevent drying.

Cold temperatures below 5 °C [40° F.] are harmful to potatoes. They cause the starch to turn into sugar, giving the potatoes a sweet flavor. The increase in sugar also causes potatoes to darken when they are cooked. Store potatoes in cool temperatures, between 5 °C and 10 °C [40° F. and 50° F.] in a dark place, and away from extreme heat or cold. Store sweet potatoes in cool temperatures also.

Potatoes stored at room temperature keep only about a week and may sprout and shrivel. Sprouted potatoes may be used, but there may be some waste. Cut off sprouts.

Potatoes stored in lighted areas will turn green, creating a bitter flavor. If this occurs, cut off the affected area before cooking.

Store dry onions in a cool, dry, dark area that is well ventilated. Put onions in a loosely woven basket or bag so air can circulate. Do not store them in plastic bags or refrigerate them.



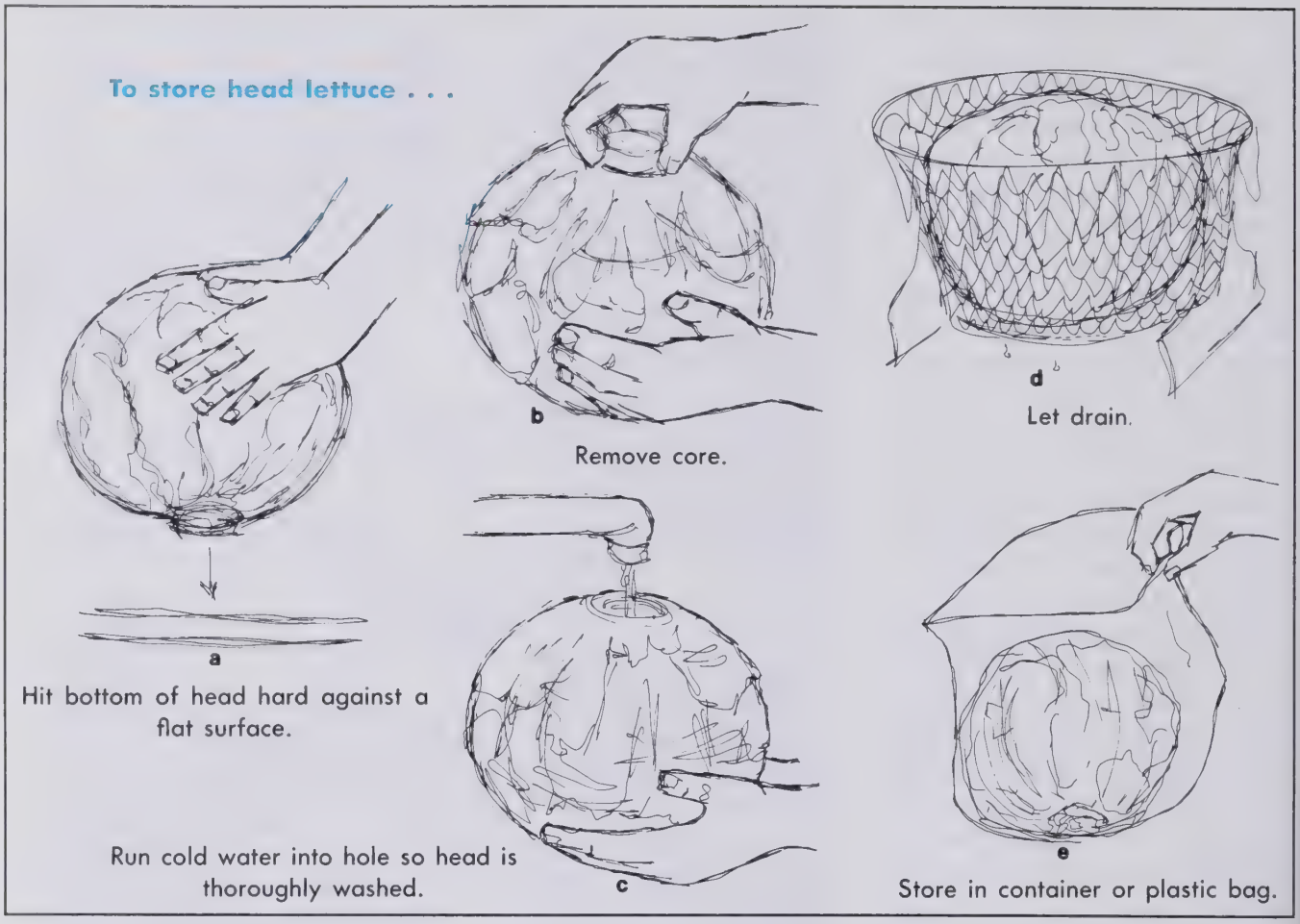
Dried Fruit

Store unopened packages in a dry, cool place. Once packages are opened, remove unused portions. Store in air-tight containers and refrigerate. This will keep insects out since most dried fruits are highly concentrated in natural sugar.

Dried Vegetables

Store dried vegetables in a dry, cool place. They will keep their quality for months.

Once opened, put unused portion in glass or plastic containers with tight-fitting lids to protect from insects and drying out. Do not mix several packages, especially if you bought them months apart. The older vegetables need a longer cooking time, so you will get uneven results if you mix them.



Meat

Store fresh meat in the coldest part of the refrigerator. Prepackaged meat may be stored in original wrapper for not more than two days. If not prepackaged, remove market wrapping paper—it is porous and absorbs moisture so meat will dry out. Wrap loosely in waxed paper, plastic, or foil.

Variety, ground, and chopped meats are more perishable. They should be used in one or two days. If not, they should be frozen.

Cured, smoked, and ready-to-serve meat and sausage should be refrigerated in their original wrapping. If they are wrapped in market wrapping paper, however, remove them and rewrap in foil, plastic, or waxed paper.

Canned hams and picnics and other perishable canned meats should be refrigerated unless label states otherwise. Canned meats usually do not freeze well.

To freeze meat, follow directions given on pages 226–228.

Store already frozen meat in the freezer as soon as you bring it home, unless it is to be defrosted for cooking.

Fish and Shellfish

- *Fresh.* Leave in store wrapper and refrigerate immediately in coldest part of the refrigerator. Use within a day or two.

• *Frozen.* Leave in original wrapping and store in freezer immediately. Keep solidly frozen and use within six months.

• *Cooked.* To refrigerate, store in covered pan and use within three or four days. To freeze, pack in moisture-vapor-proof wrapping or air-tight container and freeze; use within three months.

Poultry

• *Fresh.* Wrap loosely or keep in original wrapper. Store in coldest part of refrigerator. Use within one or two days.

• *Frozen.* Store in freezer in original wrapping.

Eggs

Store eggs in refrigerator promptly. Use within a week for best flavor.

NOTE: Handle eggs gently so they do not crack. Cracked eggs may contain bacteria that can produce food poisoning. If eggs have cracked in the carton, cook them thoroughly before using them, either alone or as an ingredient in a recipe.

Breads and Cereals

• *Flour and cereal products.* Store in dry, cool place. Once package is opened, transfer to a tightly covered container to keep out moisture, dirt, and insects.

• *Refrigerated rolls.* Store in refrigerator.

• *Frozen bakery products.* Store in freezer.



• *Bread.* Store in breadbox at room temperature because bread becomes stale quickly in refrigerator. In hot, humid weather, however, refrigerate to keep mold from growing if your kitchen is not air conditioned. Wrap in vapor-moisture-resistant material to keep from drying out. If you have a large quantity, wrap in freezer wrap and freeze. For convenience, slice homemade bread before freezing. Use as needed.

• *Cakes.* Store in containers with tight covers. Cakes can also be frozen.

• *Cookies.* Store crisp cookies in a can with a loose cover. Store soft cookies in an air-tight container. A slice of apple in the container keeps them soft.

• *Baked desserts made with custard or cream.* Store in refrigerator. Serve chilled. Do not allow to sit out on a counter or table any longer than it takes to cut pieces for serving.





• *Fruit pies.* These keep best if refrigerated. To freshen them, reheat in a moderate oven.

• *All baked goods.* To hold more than a few days, freeze them. Wrap in moisture-vapor-resistant material or place in freezer container.

Fats, Oils, and Sweeteners

• *Butter and margarine.* Refrigerate in original wrapping. Can also be wrapped in plastic or foil. Be sure they are well wrapped—they tend to absorb flavor from other foods and may develop off flavors. Use butter within two or three days if refrigerated. Butter can be frozen in its original wrapping and will keep for about two months.

• *Oils.* Store in cool, dry place. If the area is too warm, the oil may become rancid. Some products made with oil, such as salad dressings, must be refrigerated once the container is opened. Read the labels for instructions.

• *Sweeteners.* Store in cool, dry place in tightly closed container.

Let's Explore and Report

• Study the way food is stored in your home. How can you improve the storage practices?

• Demonstrate how to package the following for freezing:



National Marine Fisheries Service

Appetizing foods, such as these, begin with careful shopping and proper storage.

A small chuck roast.
6 hamburger patties.
A fresh fish.

- Develop a system to use in your home for rotating food stock.

What Would YOU Do?

You have just finished the family grocery shopping for a week. You are pushing the cart out of the supermarket to your car when you run into a good friend. She tells you about a sale on jackets in one of the stores in the shopping center. The jacket she describes is one you have wanted but could not afford. Your friend thinks they have one on sale in your size. You explain you must get the food home as soon as possible because you have many perishable items such as eggs, fish, meat, and frozen food. Your friend tells you the jacket might be sold any minute and that you can put the groceries in the car and be back in "just a few minutes" to drive them home.



Chapter 13
Your Kitchen

To help you to . . .

- **Analyze kitchens for efficiency.**
- **Make the best use of your kitchen to meet your needs.**

Perhaps you dream occasionally of your ideal kitchen—beautifully decorated, efficiently arranged, equipped with the latest appliances, and expensive. In reality, however, you must make the best possible use of the kitchen facilities you have, whether in an apartment or a house. An understanding of kitchen planning basics can help you to make your kitchen more efficient, more livable.

GUIDELINES FOR KITCHEN PLANNING

Look for these terms
work center
work flow
work triangle

While the basics of kitchen planning are used by experts to design kitchens, they can also be helpful to you in using your kitchen to its best advantage.

rigidaire
Many people dream of having a modern, efficient kitchen.

You can often arrange equipment and work areas so your work flows smoothly and efficiently.

Work Centers

Kitchens are generally divided into *work centers*. Each center includes appliances, equipment, and adequate work space and storage area for the work done there. Storage includes cabinets with shelves and drawers.

When possible, food, utensils, and tools should be stored in the location where they are first and most often used. For instance, metal spoons, ladles, and cooking forks are generally used while cooking food on the range, so they should be stored at the range center. Although storage should be planned to fit the specific items to be stored, this is rarely possible. Compromises are necessary most of the time.

The three ideal major work centers each include a large appliance — refrigerator-freezer, range, and sink. In addition, other centers may be included if space allows.

- *Refrigerator-Freezer Center.* This center should have at least 75 cm [30 inches] of counter space next to it as a landing space for food being put in or taken out. Storage space is needed for items used to package food for refrigeration or freezing, such as waxed paper, foil, plastic bags, and other storage containers. Storage space should also be available for items used when serving refrigerated or frozen food, such as paper towels, glasses, pitchers, bottle openers, and dessert servers.
- *Range Center.* There should be at least 60 cm [24 inches] of counter space on at least one side of the range. Cabinet storage is needed for foods such as canned vegetables, frying fats and oils, seasoning, rice, and pasta. Equipment to be stored at this center includes measuring spoons and cups, can opener, ladles, stirring spoons,



A planning area is convenient for making shopping lists, keeping household records, and storing cookbooks and recipes.

slotted spoons, turners, serving bowls, saucepans and pots, frypans, and pot holders.

• *Sink or Cleanup Center.* Besides the sink, this area may have appliances such as a dishwasher, food waste disposer, and trash compactor. Cleanup activities include not only washing dishes and utensils but also cleaning fruits, vegetables, and other foods. Enough storage space is needed for equipment such as measuring cups and spoons, coffee and tea pots, paring knives, cleaning brushes, wastebasket, detergent, dishcloths and towels, and scouring powder. If possible, storage space should be provided for foods such as vegetables that do not need refrigeration, canned and dried soups, peas, beans, cocoa, coffee, and tea.

• *Mixing Center.* This can be the counter between two centers. For instance, it may be the area between the range and refrigerator or any other area that has enough counter space for you to work. The mixing area should be at least 90 cm [36 inches] wide. Storage is needed for measuring and mixing equipment, knives, choppers, and baking pans. An electric mixer and blender may also be stored here. Storage space is also needed for foods such as cake mixes, flour, sugar, spices, and other baking ingredients.

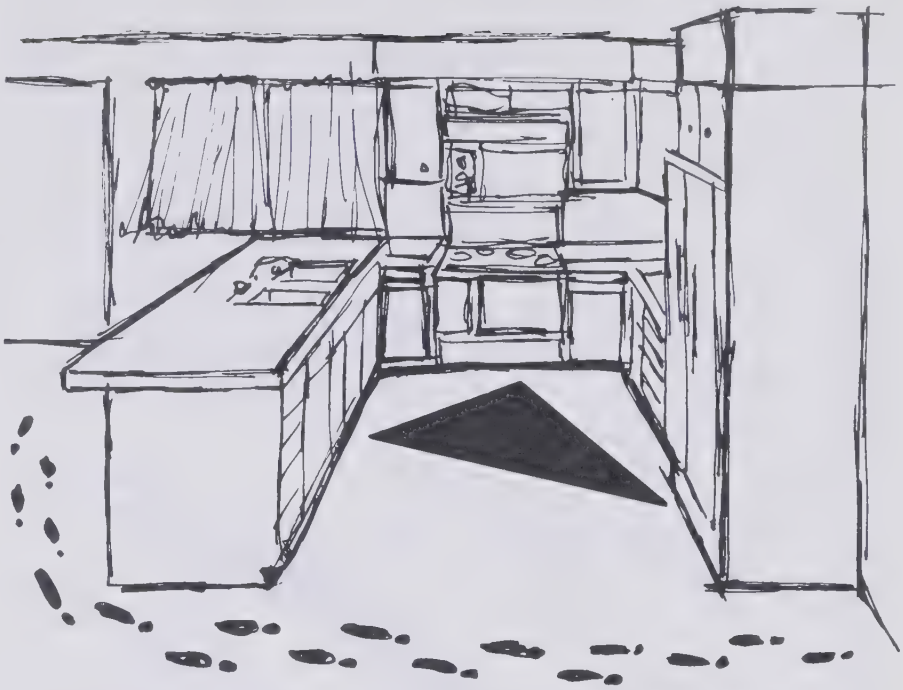
In addition to the basic work centers, other centers can be included in the kitchen if there is enough space:

• *Eating Center.* Many people enjoy informal eating in the kitchen. The eating space can be part of the counter or it can be a separate area with table and chairs. For eating at the counter, allow 45 to 60 cm [18 to 24 inches] of space per person. The counter should be at least 40 cm [15 inches] deep. If a table is to be placed in the kitchen, allow at least 75 cm [30 inches] clearance around the

table for chairs and serving. If the area is also a passageway, allow 90 cm [36 inches].

• *Planning Center.* A sit-down desk area for planning menus, making shopping lists, and keeping household records is convenient. This center can include book shelves for cookbooks, recipe files, telephone, bulletin board, and calendar.

• *Laundry Center.* If the kitchen is large enough, a washer and dryer can be installed for a convenient laundry area. Many people, however, object to bringing dirty clothes into the kitchen. They prefer to have the laundry in another part of the home, such as the utility room, bathroom, or a hall.



The work triangle is made up of the refrigerator-freezer, range, and sink centers. Why should through traffic or people walking be routed outside the work triangle?

Work Triangle

If possible, the three major work centers—range, refrigerator-freezer, and sink—should be located so that each is at the point of a triangle. This is known as the *work triangle*. The path leading from the refrigerator to the sink and back to the range forms a triangle.

In normal food preparation, the general procedure is to take food out of the refrigerator, freezer, or cabinet, clean it if necessary, prepare it, and then cook and serve it. This is known as *work flow*. Ideally, the three major appliances should be arranged according to the work flow. This means the sink should be between the refrigerator and the range. However, in many kitchens this may not be possible without major remodeling to put the plumbing and electrical connections where they are needed.

The three sides of the work triangle should total no less than 3.6 m [12 feet] and no more than 6.6 m [22 feet] long. Ideally, the triangle should measure as follows:

• Between sink and refrigerator—1.2 to 2.1 m [4 to 7 feet].

• Between sink and range—1.2 to 1.8 m [4 to 6 feet].

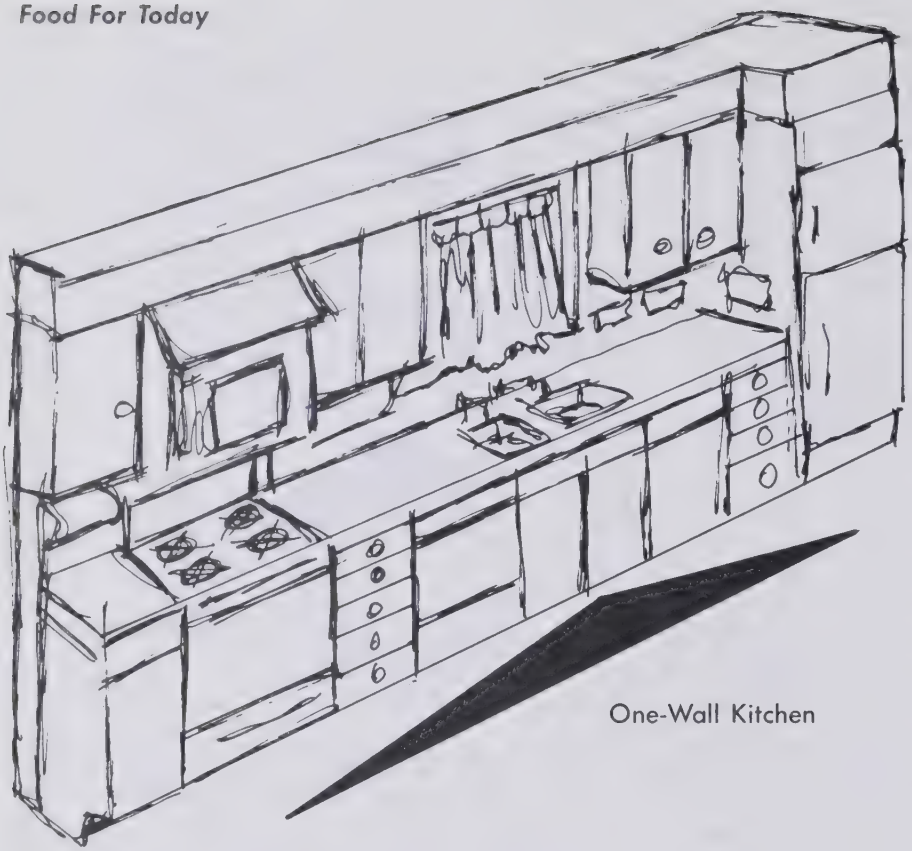
• Between range and refrigerator—1.2 to 2.7 m [4 to 9 feet].

Through traffic is made up of people walking through the kitchen to go from one area to another. Ideally all through traffic should be outside the work triangle. Otherwise it can cause confusion, congestion, and accidents when someone is trying to work in the kitchen.

Basic Kitchen Plans

The work triangle is usually arranged into basic kitchen plans. The five most commonly used are one-wall kitchen, corridor kitchen, L-shape kitchen, U-shape kitchen, and island or peninsula.

• *One-Wall Kitchen.* Appliances are lined up against one wall with storage cabinets and counter space between them. This arrangement is generally



One-Wall Kitchen

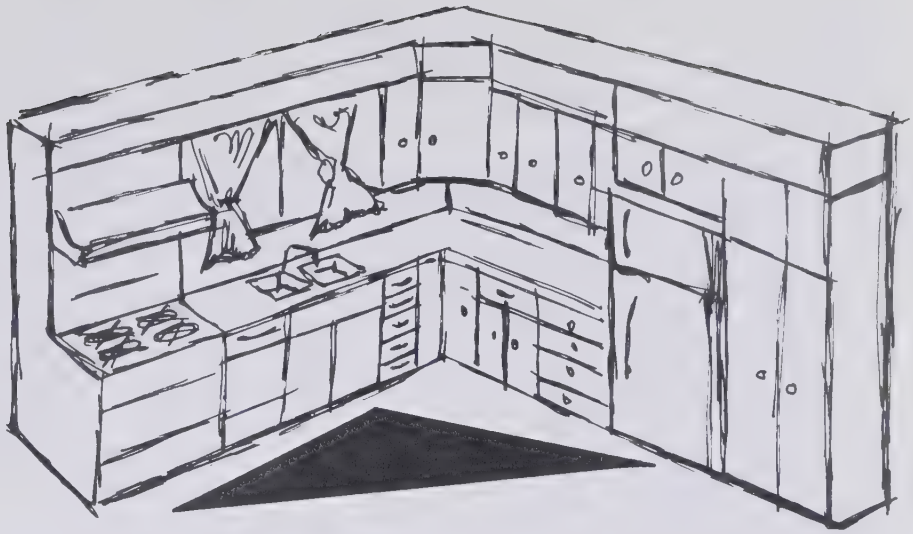
Corridor Kitchen

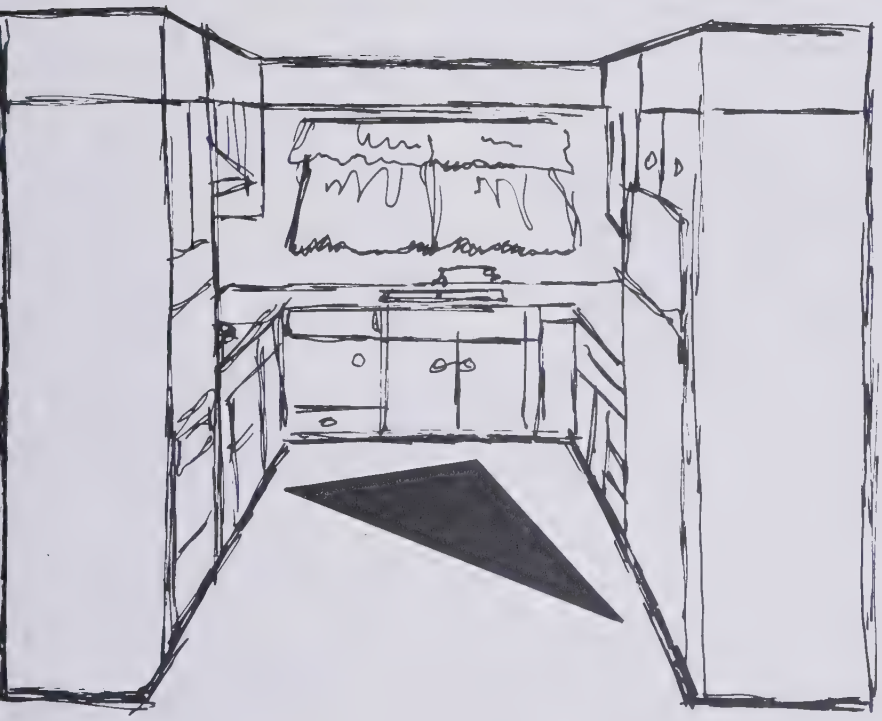


used where space is limited, as in apartments. It can be separated from the living area by a sliding door or it can be in a separate room. For most people, this type of kitchen does not provide enough counter or storage space.

- *Corridor Kitchen.* The appliances, with cabinets and counter space, are arranged on two facing walls. Usually the room is long and narrow. If the room is not too long, this can be an efficient kitchen, especially if one end is a wall. If both ends of the kitchen have doors, traffic through the kitchen may cause inconvenience.
- *L-Shape Kitchen.* This arrangement calls for a continuous line of appliances and cabinets on two adjoining walls. It can be efficient, especially in a large room. The remaining space can sometimes be used for a family dining table, a planning center, or a work area.
- *U-Shape Kitchen.* This consists of a continuous arrangement of appliances and cabinets on three adjoining walls. It provides the best traffic and work pattern. It usually has the shortest walking distance between appliances. Because of these advantages, it is a highly desirable kitchen plan.
- *Island or Peninsula Kitchen.* This arrangement is used in large kitchens with one of the other four basic plans. It calls for a separate counter or *island* in what might otherwise

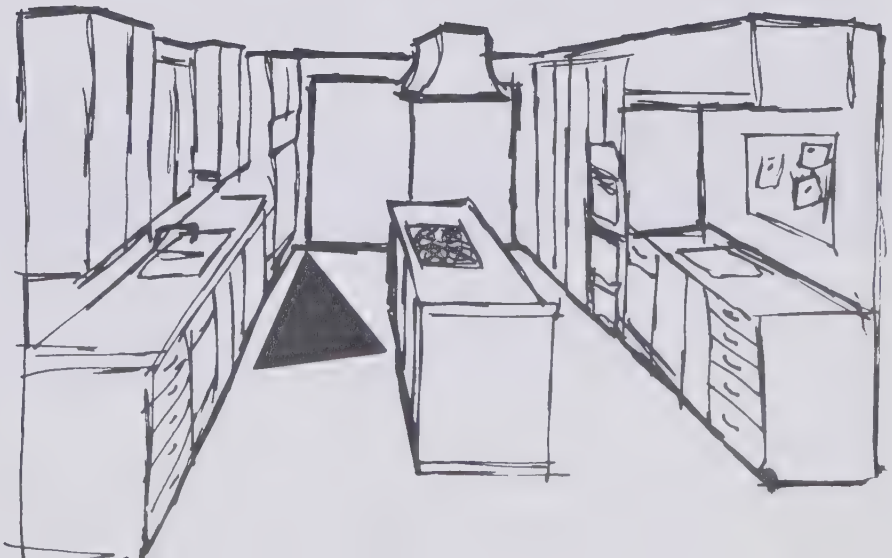
L-Shape Kitchen

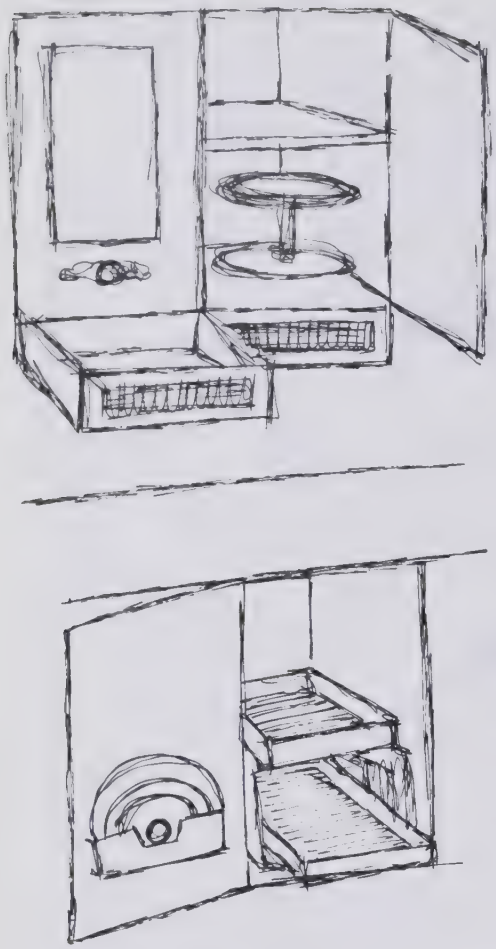




U-Shape Kitchen

Island or Peninsula Kitchen





Storage aids can help you to make the best possible use of the space you have. These include lazy susans, under-cabinet drawers, lid racks, and pull-out shelves.

be unused space. A *peninsula* or extension of one of the counters can also be used.

Let's Explore and Report

- Analyze your kitchen at home. What changes would you make in the way food and equipment are stored to make it more efficient? Can you improve the work triangle? How?

DO THE BEST WITH WHAT YOU HAVE

Look for these terms

ampere
circuit
fuse
grounding
kilowatt hours
volt
watt

Few kitchens can meet the ideal standards just described in the first part of this chapter. Most have one or more of the following characteristics:

- Too small, with not enough storage or counter space.
- Adequate counter and storage space but old enough to need redecorating.
- Old, very large, with appliances and perhaps a storage cabinet or two, not enough counter or storage space, and too much distance between work centers.

How can you solve these "problem" kitchens? Begin by deciding what your needs are. What kind of cooking do you do? How often do you shop? Do you entertain large groups frequently? Do you usually have just a few friends for a casual dinner? Do you lead such a busy life that you must cook meals ahead and freeze them? Do you eat out a great deal? With the answers, determine the type of food and equipment you must store. Compare your needs with your kitchen. Does it have the amount and kind of storage space you need? Is there enough work space? Does the kitchen need to be remodeled by a professional?

Storage and Work Space

You may not be able to add storage space in a small kitchen, but you can make more efficient use of what you have. Storage aids available in most housewares departments can often help solve some of your space problems.

Portable sliding shelves for cabinets, stackable bins, beverage can dispensers, revolving shelves, lazy susans, door shelves, dish racks, and kitchen sink aids can help you arrange food and equipment more efficiently. Under-cabinet drawers can be mounted to the bottoms of wall cabinets for storing bread, small food packages, and utensils.

If space is available, a large utility cabinet may be purchased. Decorate it with wallpaper to blend with the kitchen color scheme.

Peg board is both decorative and useful. It is a thin wood-like board with holes spaced 2.5 cm [1 inch] apart. Special hooks inserted in the holes are used for hanging utensils and tools. The board can be painted to match your kitchen color scheme and mounted on any wall.

Many kinds of wall brackets and shelving are also available for storing dishes, glasses, small appliances, and food.



Window Shade Mfrs. Assoc.

In a remodeled kitchen in an older apartment, a small table provides space over a radiator. A tall, narrow cabinet offers extra storage space. Note that curtains match the wallpaper on the walls and window shades.



Kitchen tools hang on pegboard painted to match counter tops.

Large kitchens in older homes often have adjoining pantries. These can be organized into efficient storage for food and equipment.

If your kitchen has only appliances and no counter space, you have several alternatives. You may be able to buy or build a table to serve as a work counter. Portable base cabinets, available at a reasonable price, provide both storage and work space. Many have casters so they can be wheeled to wherever they are needed. A cutting

Kitchen on left had a few problems. The cabinet doors were scratched, the portable dishwasher had to be moved to the sink when needed, and there was no counter to the right of the range. The kitchen was updated, shown on right. Cabinet doors were replaced, the portable dishwasher was permanently installed to the left of the sink, a tray cabinet with a wood counter was added to the right of the range, and wall cabinets were installed above the range for additional storage. New curtains and wallpaper completed the modernizing program.

Cabinetpak





board that fits over the sink can give you added work space.

Remodeling on a Budget

If the kitchen shows signs of wear and needs redecorating, your choices will depend on whether you own or rent. If you rent, ask the owner or manager for permission to do the work you have in mind. Sometimes renters are reimbursed for the materials used in improving the appearance of a kitchen. If you own the home, decide how much you can spend. In either case, you will find many low-cost remodeling hints in current home magazines. People often collect these ideas in a scrapbook for future reference.

Because a kitchen is old does not mean the cabinets must be replaced. Usually, kitchen cabinets show signs of wear on the doors and shelves. Scratched or stained shelves can be painted or covered with self-adhesive plastic. Exteriors can be refinished, painted, or antiqued. If the doors are beyond repair, you might consider having them replaced. Replacement cabinet doors are made of molded plastic or covered with laminated plastic. They come in many colors and wood tones.

Worn as well as damaged counter tops can be a problem because dirt accumulates in scratches and holes. If only a small part of the counter top needs replacing, check with a dealer. Perhaps an insert can be put in rather than replacing the entire top.

Counter Tops

The most common counter tops are laminated plastic and ceramic tile.

- *Laminated Plastic.* Comes in many colors, patterns, and finishes. Moisture-resistant, durable, and easy to clean. Can be damaged if extremely hot pans are set on it.
- *Ceramic Tile.* Has many design possibilities. Heat-proof and durable. Grouting between tiles sometimes difficult to keep clean.

Inserts such as stainless steel, glass ceramic, marble, or wood can also be installed in small areas for special use.

Floor Coverings

Although floor coverings contribute to the overall design effect, they should also be selected for ease of cleaning. The following floor coverings are used in kitchens:

- *Vinyl-Asbestos Tile.* Durable, relatively low-cost, and easy to install and maintain. Resistant to grease and alkalies. Some are designed for do-it-yourself installation.
- *All Vinyl—Sheet or Tile.* Durable but expensive. Easy to maintain. Resistant to grease and alkalies. Some do not need waxing.
- *Linoleum.* Fairly durable. Moderately priced. Easy to maintain.
- *Kitchen Carpeting.* Use only the type made for kitchens. Fairly expensive. Comfortable to walk on. Not as noisy as hard materials. Must be vacuumed frequently. Spills must be wiped up immediately.

Wall Coverings

Many types of wall coverings are available. Select for decorative effect, but be sure material will withstand the steam and heat in the kitchen.

- *Paint.* Easy to apply. Use an enamel paint with a high-, semi-, or low-gloss finish. It is durable and washes easily, and is more satisfactory for kitchens than water-base paint.
- *Wallpaper.* Select only washable types. Wide variety of designs available. Relatively low-priced. Prepasted type is easy to apply.
- *Vinyl Wall Covering.* Easy to maintain. Durable. Comes in wide variety of patterns.
- *Paneling.* Can be used to cover walls in poor condition. Moderately priced.
- *Tile—ceramic, metal.* Relatively expensive; easy to maintain.

Lighting

Good lighting is essential in any kitchen. Besides natural light from windows, light should come from two other sources:

- *General Lighting.* Usually from a ceiling fixture, either incandescent or fluorescent. The



Armstrong Cork Co.

Imagination, hard work, and minimum amount of money brought about these beautiful results. This old kitchen had only a sink and base cabinets. The new owners replaced the sink and the counter top. They painted the cabinets and put in new knobs. They replaced the flooring with do-it-yourself floor tile. Walls were painted to match the counter top. Since the kitchen had no wall cabinets, shelves were installed for added storage and painted to match the base cabinets. Wicker and chrome furnishings and live plants add a cheery note to the room.

incandescent fixture should have a total of at least 150 watts for good general lighting. A fluorescent light should provide at least 80 watts. It can give either a cool or warm light, depending on the type you select.

- *Special Lighting over Work Areas.* Lighting should be over the range, the counter areas, and the sink. This will prevent you from working in your own shadow. Lights on the range may provide some of the lighting needed in that area. Lights can be installed under the wall cabinets to provide good lighting for counter work areas. If fluorescent lights are used, a 60 cm [24-inch] lamp will light 90 cm [36 inches] of counter work space.

Electrical Wiring

Electricity, if used properly, can be one of your best servants. If misused, it can injure or kill you.

How does electricity work? It flows through wires covered with insulation to protect you from shock, fire, and death. The wire must be the right size to carry a certain amount of elec-

tricity. If too much electricity flows through, the wire gets overloaded. It will overheat and burn.

In a house, electricity flows through arrangements of wires called circuits. Each *circuit* supplies power to a limited number of lights and wall outlets.

Electricity from the main supply line outside the house flows through a meter in the house. The meter measures the amount of electrical energy used in the house. Electrical energy is measured in *watts* (W). Your utility bill is based on kilowatt-hours (kWh). A *kilowatt-hour* is the amount of work done by one kilowatt (1000 watts) in one hour. This kind of energy can also be measured in joules (J). Watts and joules are both metric units. However, joules will probably be used for most energy measurements under the International System of Units (SI metric).

From the meter, the electricity flows to the *fuse box*. The box has a main switch, which is used to disconnect the flow of electricity from the main supply line. It also has a fuse or circuit breaker for each circuit.

The *fuse* allows only a limited amount of electricity to pass through each circuit—only the amount the wire can handle. The fuse is a round plug which screws into position. It has a glass surface through which you can see a metal strip. Fuses come in several sizes from 10 to 30 amperes. An *ampere* is a measure of the volume of electric current. The circuit breaker is a switch which serves the same as a fuse.

The pressure of electric current is measured in *volts*. The standard house circuit has 120 volts. Major electric appliances which produce heat, such as a range or clothes dryer, require more current. These appliances must be connected to circuits which supply 240 volts.

If you put too many appliances on one circuit or if there is a defect in an appliance, the fuse "blows." This means the metal strip melts and breaks the circuit so no electricity can flow through. In the case of the circuit breaker, the switch automatically closes or "trips." In either case, it means that more electricity was flowing through the circuit than the wiring was designed to handle. Usually, the last appliance you turned on before the fuse blew is the troublemaker. Disconnect it before attempting to replace the fuse.

To restore power: Take a flashlight with you to the fuse box. Pull the main switch to the "off" position. Be sure you are not standing on a wet floor or leaning against water pipes or a sink—you can get a severe shock. Replace the fuse and turn the main switch on again. Be sure to keep a supply of fuses of the right size on hand. If the fuse box has circuit breakers, switch the circuit breaker on.

Sometimes people think they can solve the problem of fuses blowing by using a larger size fuse. Others use coins or foil to replace the fuse. These are dangerous practices because they allow more electricity to flow through than the wiring was meant to handle. When the wires get hot, the house can catch on fire.

Keep in mind that kitchens must have an ample supply of electricity. It is needed not only for major appliances, such as the refrigerator, dishwasher, and food waste disposer, but also for the many portable appliances people use today.

Do not assume that new apartments and houses have adequate wiring. Few homes have enough circuits to meet today's needs for electricity.

If you do not have enough outlets for all the appliances, you may be tempted to use extension cords. Do not use ordinary extension cords with appliances, especially those that heat up. A toaster, roaster, or waffle iron draws more current than the ordinary extension cord can handle. It may overheat and cause a fire. If you must use an extension cord, buy a heavy-duty one designed for appliances. How can you identify a heavy-duty extension cord? The size of the wire used in the cord is marked on the label. The lower the number, the heavier the wire. An ordinary extension cord usually has No.

18 wire while the heavy-duty cord has No. 14. The heavy-duty cord also costs more.

Several tell-tale signs can alert you to improper or inadequate wiring in your kitchen:

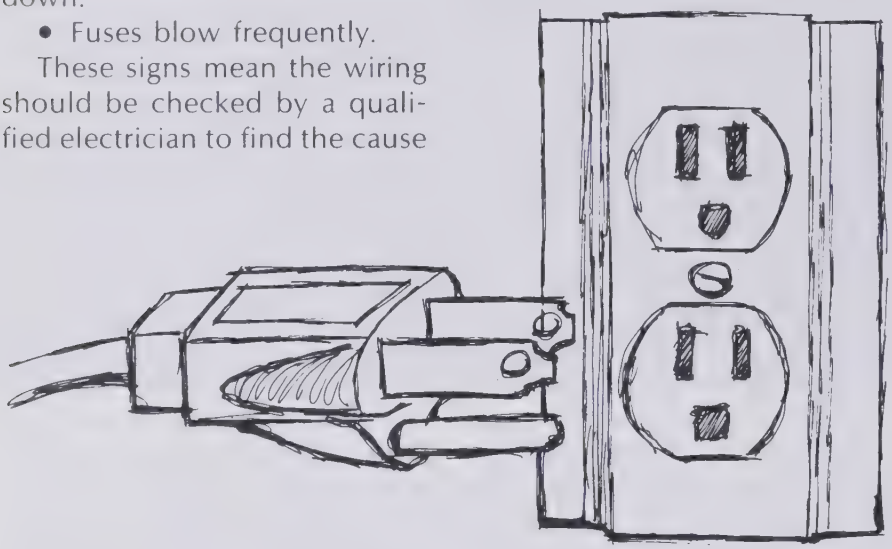
- Lights dim when an appliance goes on.
- Appliances such as toasters and grills take a long time to heat.
- Mixers and motors slow down.
- Fuses blow frequently.

These signs mean the wiring should be checked by a qualified electrician to find the cause of the problem. Necessary repairs should be made to prevent fire, injury, or even death.

APPLIANCES SHOULD BE GROUNDED

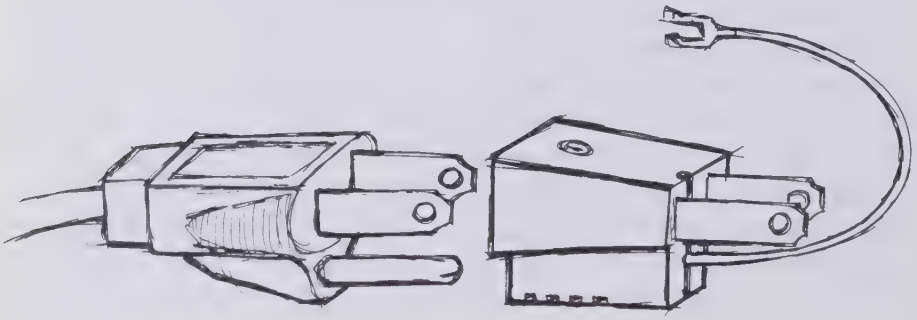
Electricity follows the path of least resistance to the ground. If the wiring on an ungrounded appliance becomes defective and you touch the appliance, you could get a severe shock and even be killed. *Grounding* an appliance means providing a path for the electricity to travel if something happens to the wiring. The National Electric Code now specifies that homes must have a neutral wire as part of the wiring system. Appliances are grounded to this wire.

How can you tell if your home has a neutral wire? Look at the wall outlet. If the receptacles have three holes, a neutral wire has been installed. Modern appliances have the

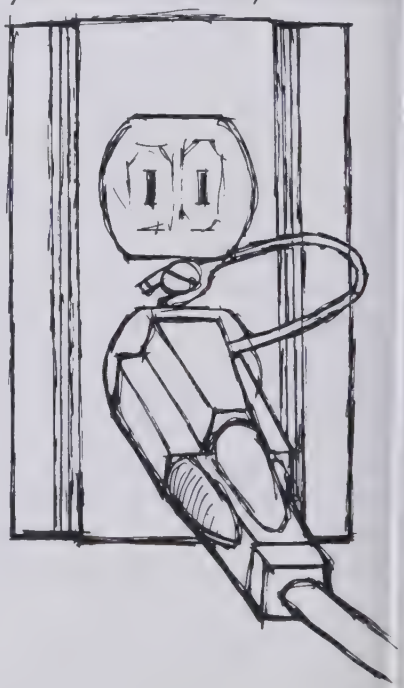


If your home has a neutral wire, each wall receptacle has three holes, such as these. Plugs with three prongs mean the appliance has a built-in ground wire.

Many older homes have wall outlets with only two holes. Adapters are available so plugs with three prongs can be used in outlets with only two holes.



The pigtail or wire on the adapter plug must be fastened to the outlet screw for grounding. However, this will ground appliances only if house wiring has been installed in metal pipe called conduit. Check with an electrician to be sure your appliances are properly grounded if the outlets in your home have only two holes.



ground built in with a three-prong plug.

If your home has wall outlets with a two-hole receptacle, it does not have the neutral wire for grounding. In many older homes, wiring was installed in metal pipe called conduit. The metal pipe serves as a ground. In that case, you can get a two-prong adapter for a three-prong plug. The adapter has a pigtail—a small wire extending from the plug which is fastened to the screw in the wall outlet. This grounds the appliance. If the wiring in your home is not in conduit, check with an electrician to learn how appliances can be grounded. For your own safety, be sure to ground major appliances.

DECORATING THE KITCHEN

A kitchen offers many opportunities for your personal touch in decorating. Follow the same color and design guidelines that you would use for other rooms in the home.

Keep in mind that the kitchen environment combines three elements not found together in other areas of the home: food, heat, and moisture. These can be an invitation to insects and other pests if the area is not kept clean. Decorative treatments, including floor and wall coverings, and accessories, should be:

- *Sanitary.* Because you are working with food, you will want to keep your kitchen as clean as possible. Be sure that decorative accessories, counter tops, floor coverings, and wall coverings can be easily cleaned and that they are durable enough to hold up under regular washing.
- *Moisture-proof.* The items should not only be washable, but they should also be able to withstand the steam normally found in a kitchen.
- *Heat-proof.* Avoid using highly flammable materials in the kitchen. Some plastics burn, others melt, and many give off poisonous gases when they catch fire. See Chapter 15. Use only heat-proof objects near any appliance that produces heat, such as a range or toaster-oven. If possible, have a stainless steel insert or portable glass ceramic counter next to the range for hot pans.

Decorating with Live Plants

Warmth and humidity in the kitchen make it a good place to grow plants. However, keep them away from the food preparation area so that soil or plant parts do not accidentally fall into the food. Do not keep poisonous plants in the kitchen, such as dieffenbachia, poinsettia, or bittersweet.

Let's Explore and Report

- Clip pictures from home magazines showing low-cost ideas for improving storage and work space in small kitchens. Make up a file for future reference.
- Select one do-it-yourself method for remodeling wood kitchen cabinets that are badly scratched. Investigate the method. Prepare a five-to-ten minute talk describing exactly how to proceed with the remodeling.
- How many more electric outlets would you need in your kitchen if you could rewire it? Where would you locate them?
- Investigate the causes of fire in your community during the past year. How many were caused by faulty electric wiring?

What Would YOU Do?

- You have moved into your first home of your own—an apartment in an old building. Among your possessions are a blender, a toaster, a portable mixer, and an electric coffee maker. You enjoy playing the radio while you work in the kitchen. You notice that the lights dim every time the refrigerator motor turns on. Twice, while preparing a meal for company, you blew a fuse. The landlord complains that you have too many electric appliances.


TRAIN
LOAD
APPLIANC
SALE
SELF CLEANING OVEN

Chapter 14

How To Buy Kitchen Appliances and Equipment

To help you to . . .

- **Understand warranties.**
- **Choose credit terms to meet your needs.**
- **Decide which appliances and equipment are suitable for your needs.**
- **Use and care for appliances and equipment properly.**

Buying kitchen appliances and equipment can often mean spending a large amount of money. The value you get for the dollars you spend will depend on whether you have determined your needs accurately and how carefully you shop.

HOW TO BUY APPLIANCES

Look for these terms

American Gas Association (AGA)
annual percentage rate
discount rate
full warranty
installment plan
limited warranty
Underwriters' Laboratories, Inc. (UL)
warranty

Montgomery Ward

Major kitchen appliances are costly. They should be selected carefully so you get full value for your money.

When you shop for an appliance, visit a number of dealers to check quality and price. Be sure the store has a wide enough selection so you can find exactly the model you need. Ask about the service offered in case repairs are needed.

Do not select on price alone. The least or most expensive is not necessarily the best buy. Remember, an appliance should last you for a number of years, so buy one that has features you want and need. However, do not spend money on accessories you may never use.

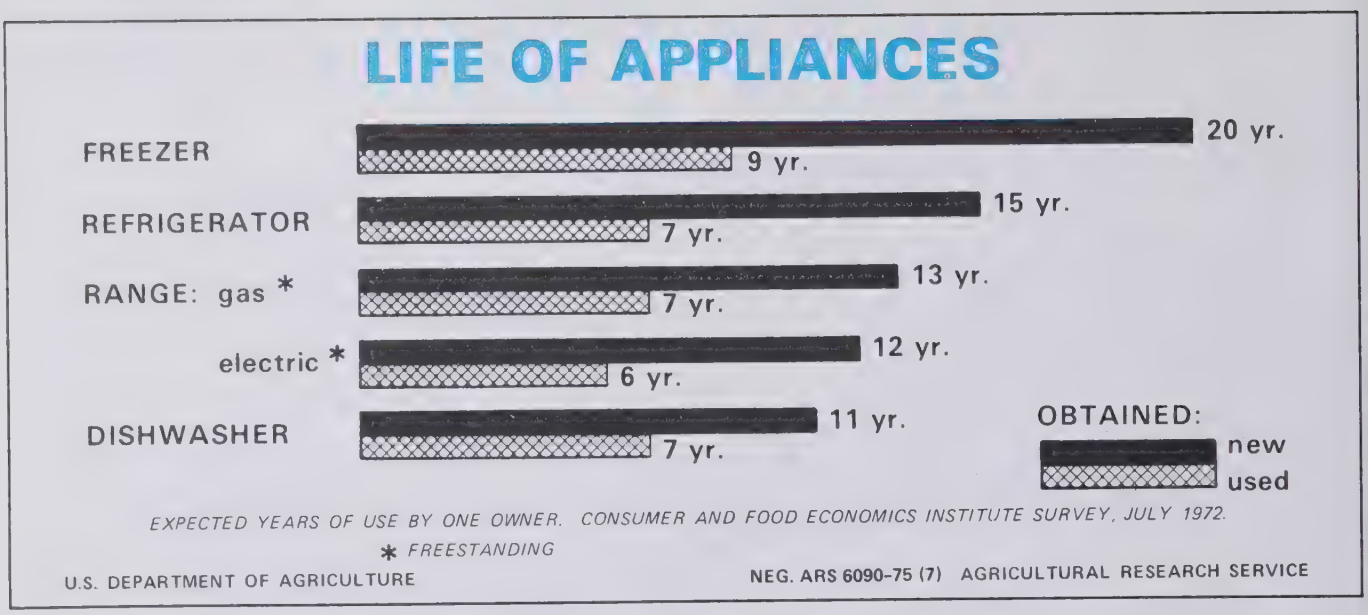
Look for the warranties and seals of approval. Both of these can help you buy a safer, more satisfactory appliance.

Before you sign a contract to buy, find out what the selling price includes. You may have to pay extra for delivery and installation. Be sure you find out the total cost, including taxes, before you agree to make the purchase.

If you plan to buy on credit, you will want to shop for credit as carefully as you shop for the appliance.

Warranties

A *warranty* is a guarantee to the purchaser by the manufacturer. It guarantees that if the product fails to perform within a certain time period, the entire product or parts of it will be



Kitchen appliances can be expected to last a certain number of years, according to recent studies.

repaired at little or no cost to the purchaser.

A company does not have to issue a warranty on a product. If it does, however, it must follow the standards set up by law.

The warranty must state clearly whether it is full or limited.

- A *full warranty* covers all parts, labor, and shipping costs involved in the repair of any defect. It limits the time period, such as one or five years.
- A *limited warranty* has restrictions in addition to the time limit. For instance, it may cover only certain parts of the product or it may not cover labor costs.

Look for the warranty before you buy the appliance. Check for the following information:

- Kind of warranty—full or limited.
- Name and address of company guaranteeing the product.
- Exactly who is covered by the warranty.
- Exactly what is covered and for how long.
- A step-by-step description of the procedure the purchaser should use if the product has to be repaired under warranty.

The warranty should be clearly stated. If any parts are confusing, write or call the manufacturer for an explanation *before* you buy the product. Some manufacturers have toll-free numbers you can call for information or complaints.

Keep all warranties in a file folder or box so you will know where they are. On the warranty write the name of the store from which you bought the appliance and the date. Attach the sales receipt to the warranty. When the appliance is delivered, ask the installer for the model number and serial number. Write these on the warranty so you will have them if the appliance should need servicing. Sometimes these numbers are on the sales receipt, but check them with the appliance to be sure they are correct.

Most appliances have warranty registration cards, which must be sent to the manufacturer by the purchaser. Sometimes the card must be sent in to make the warranty effective. Be sure to return the card since it is in your best interests to do

so. It not only identifies the owner of the appliance but it also helps in locating the product in case of a manufacturer's recall.

Seals of Safety and Performance

When buying gas and electric appliances, look for seals showing that the products meet specified standards.

- *American Gas Association (AGA) certified seal.* Found on all gas appliances tested by the American Gas Association laboratories. These products conform to safety and performance standards established by the National Standards Institute. They are factory inspected at least once a year to insure that they continue to meet the standards.
- *Underwriters' Laboratories, Inc. (UL) certification seal.* Found on all electrical equipment, appliances, and materials tested and approved as being safe to use. These products have passed laboratory tests and are periodically examined for safety.

Shopping for Credit

Few people can afford to pay cash for a major appliance priced at several hundred dollars or more. Most usually purchase appliances on the *installment plan.* This means they sign a contract to pay the store for the appliance over a specific time period and in equal monthly payments.

Before you sign the final contract for an installment purchase, be sure you know the amount of interest you will pay. *Interest* is a fee you pay for borrowing money. According to the Truth-in-Lending Act, passed in 1968, lenders must state interest in terms of the *annual percentage rate.* This is the actual rate of interest for the year. Some places, however, state the same amount of interest in different ways, such as on a monthly basis or as "discount" rates. These are usually much less than the percentage amounts expressed in annual percentage rates. This does not mean you are paying less interest—it is just a different but misleading way of stating the same interest. Be sure amounts are expressed in annual percentage rate.

If you buy an appliance on an installment loan from the store, you may be paying from 18 to 30 percent or more annual percentage rate. Check the annual percentage rate on the same amount borrowed from banks. You will probably find a lower interest rate that can save you money. In that case, borrow the money from the bank, pay cash for the appliance, and then make your installment payments to the bank.

If the Appliance Does Not Work

Before you begin to use a new appliance, read the owner's manual which comes with it. If you are replacing an appliance, do not assume that the new one works the same way. Manufacturers make constant changes and improvements in their products. The new models often require different operating methods than the older ones.

If an appliance does not work, check the following:

- Is it plugged in?
- Is a fuse blown?
- Are controls set properly?

Many appliances have several



American Gas Assoc.
American Gas Association (AGA) certified seal.



Underwriters' Laboratories, Inc.
Underwriters' Laboratories, Inc. (UL) certification seal.

controls that must be set before they will work.

- Is the pilot light on (if it is a gas appliance)?

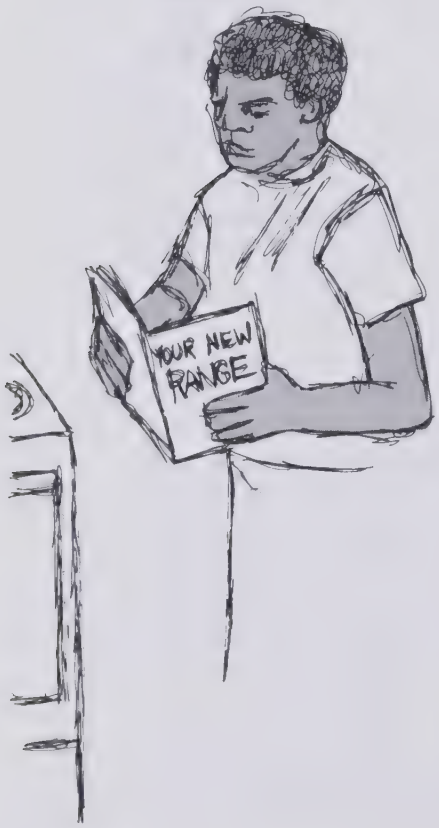
Review the instruction manual carefully. More than one-fourth of all service calls are unnecessary—the consumer was not using the right procedure in operating the appliance.

If, after checking your procedure, the appliance still does not work, call the dealer or certified service agency. Give the model and serial numbers. Be sure you have the warranty handy if the product is still under warranty.

If, after servicing, the problem continues and the product is still under warranty, talk to the store manager. If you receive no satisfaction, write or call the manufacturer, giving all details.

If you still receive no satisfaction call your local Better Business Bureau. Many localities also have other consumer action groups and agencies, such as the consumer fraud and protection division of the state attorney general's office.

Be sure you read the owner's manual before you begin to use any new appliance.



MAJOR APPLIANCES

Look for these terms

automatic defrost
convection oven
freezer
frostless
frozen food compartment
magnetron tube
manual defrost
microwaves
porcelain enamel

Major kitchen appliances include the refrigerator-freezer, range, dishwasher, food waste disposer, and trash compactor.

Refrigerator-Freezer

Two types of refrigerator-freezers are available:

- *Conventional Model.* Has one outer door. Provides storage for fresh and frozen food. *Frozen food compartment:* located at top of the interior, enclosed with a lightweight inner door; maintains temperature around −12 °C to −10 °C [10° F. to 15° F.]; can be used for storing already frozen foods up to two weeks but is not cold enough to freeze fresh foods; must be defrosted regularly. Usually less expensive than other types.
- *Combination Refrigerator-Freezer.* Has two outer doors, one for the refrigerator and one for the freezer. *Freezer:* may be at the side or top; maintains temperature of −18 °C [0° F.]; can be used to freeze fresh foods as well as store already frozen ones.

Top and side freezers each have certain advantages and disadvantages:

- *Top Freezer.* Takes up the top third of the appliance. Freezer space is as wide as the refrigerator, so wide or bulky items such as a large turkey can be stored easily. However, items are stacked on top of each other so the ones on the bottom in the back may be hard to reach.
- *Side Freezer.* Usually takes up more than one-third of the appliance. Costs a little more than comparable size with top freezer. Space well organized with shelves, baskets, and door shelves. Shelf space is narrow, so large or bulky foods such as turkeys may be difficult to store.

Refrigerators can be purchased as manual defrost, automatic defrost, or frostless:

- *Manual Defrost.* Must be defrosted regularly. Used in most inexpensive refrigerators,

usually conventional single-door models.

- *Automatic Defrost.* Only refrigerator section defrosts automatically. Freezer section must be defrosted manually. Costs less to buy and to operate than the frostless type.
- *Frostless.* No visible accumulation of frost in either refrigerator or freezer. Defrost water is disposed of automatically. Costs more to buy and to operate than other models do.

The inside of the refrigerator may be divided into several smaller storage compartments, such as meat tray, fruit and vegetable crispers, egg holder, and butter keeper.

Refrigerator and freezer sizes are given in cubic feet. Instead of buying by cubic feet, visualize the amount and kind of food it will have to hold. Usually, the size you need is determined not only by the number of people in the family but also by how frequently you shop. A family of two who shops twice a month will need as large a refrigerator as a family of five who shops twice a week. If you entertain a great deal, you will need a larger refrigerator than someone who does not. Consider your own personal needs when selecting this appliance.

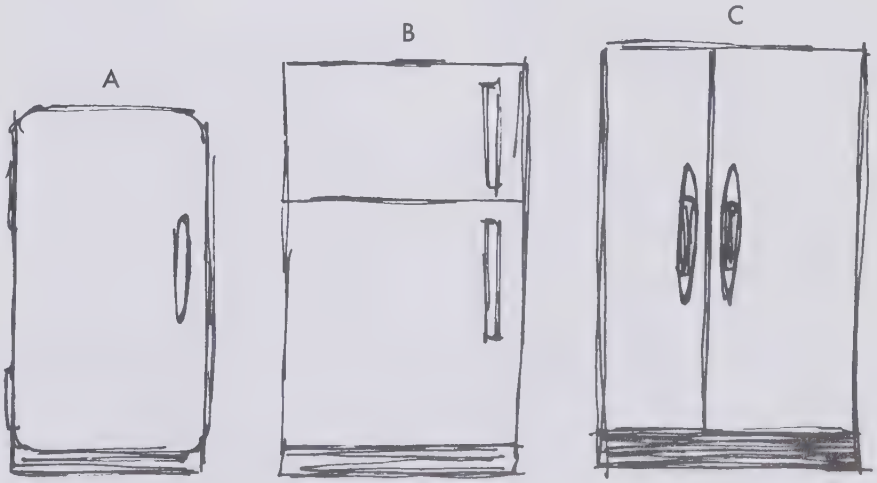
The size you buy will also be determined by the space in the kitchen. If space is limited and you need a large refrigerator and freezer, you might consider getting a separate refrigerator and



Frigidaire

Appliances are available in many different colors. Select the one that best fits your kitchen color scheme.

Three types of refrigerators are available. (A) *Conventional refrigerator* with frozen food compartment has only one door. Frozen food compartment cannot be used to freeze food but will store already frozen food for about two weeks. *Refrigerator-freezer* with (B) door across top or with (C) vertical doors. Both maintain temperature of −18°C [0°F.] or lower in freezer. They will freeze fresh foods and will store already frozen foods for long periods.



freezer. Keep the freezer in the basement, hall, or garage.

Most refrigerators come in various colors, some with decorator door panels.

Manufacturers usually have a wide range of models, from inexpensive ones to the top of the line with many extras. Select according to your needs and the amount of money you want to pay.

Buying a Refrigerator-Freezer

When you buy a refrigerator, ask yourself these questions:

- Does it provide the space you need for the kind and amount of food you buy?
- Will it fit the space in your kitchen?
- Is it easy to clean?
- Are shelves adjustable?
- Does it have separate temperature controls for the refrigerator and freezer?

BUYING A FREEZER

Freezers are available as upright or chest models. Both operate equally well and maintain temperatures of −18 °C [0° F.] or below.

- *Upright.* Takes about the same amount of space as a refrigerator. Has shelf storage that is easy to use and see. Many models are frostless.
- *Chest.* Takes up more floor space than upright. Space must also be allowed for the lid to open. The lid should be counterbalanced so it is easy to open and will stay open until you close it. All chest models require defrosting about one to three times a year.

The freezer should have a lock, especially if it is in the garage or in an area where children play. The freezer should also have a safety light or alarm to signal when the current is off or the temperature is too high.

Locate the freezer in a cool, dry, well-ventilated area out of direct sunlight. If it is in a hot room, the operating cost can increase by 15 percent.

USE AND CARE OF REFRIGERATOR-FREEZER

Use your refrigerator with care to save energy. Every time you open the door, warm air rushes in and the motor turns on to lower the temperature. Plan your trips to the refrigerator and freezer. Take out all the items you need at one time instead of opening and closing the door several times within a few minutes.

Check the door seal regularly to be sure warm air is not seeping in. Put a dollar bill in the door, close the door, and pull on the bill. If it is loose and comes out very easily, the door seal is not tight enough and needs servicing.

Keep the inside as clean as possible. When putting containers in, wipe them off so they are clean. Wipe up spills immediately. Dirt and spills encourage bacteria to grow.

If the appliance must be defrosted manually, be sure to do it regularly. Ice should not be allowed to build up more than 1.3 cm [½ inch]. Thicker ice prevents the unit from working efficiently. If the ice layer gets too thick, the refrigerator will stop working completely.

Frostless refrigerators should be cleaned regularly, at least twice a year. Be sure to clean the water evaporating tray, according to instructions in the owner's manual.

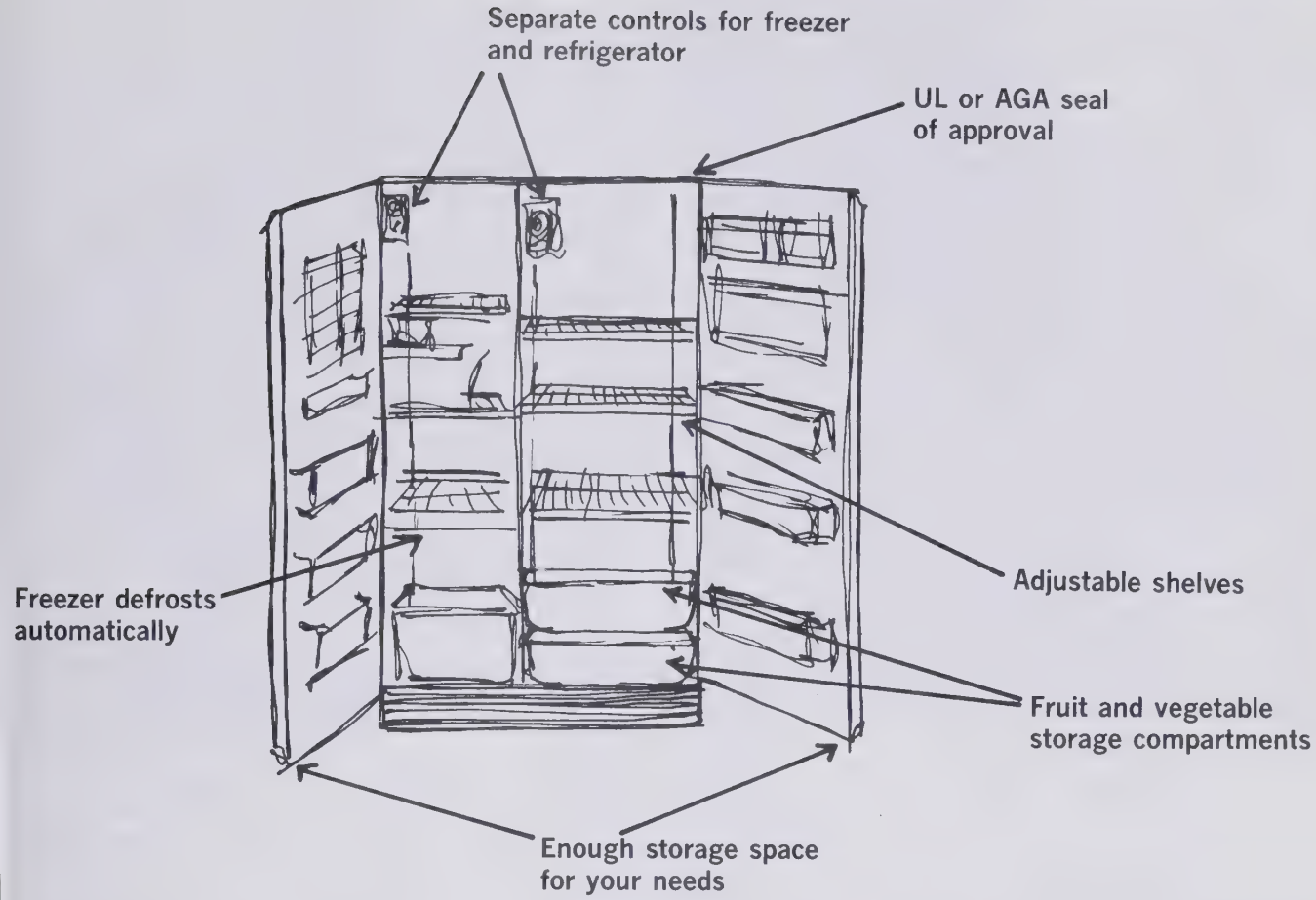
In cleaning a refrigerator-freezer, use only a mild detergent and baking soda and water. Turn the refrigerator and freezer controls to "Off." Remove food. Pack frozen food in a picnic ice chest, a cardboard box, or wrap in several thicknesses of newspaper so it will stay frozen.

Take out removable parts. Wash with mild detergent, rinse, and wipe dry.

Wash the inside with a solution of 30 mℓ [2 tablespoons] of baking soda in 1 ℓ [1 quart] of warm water. If necessary, use soap or mild detergent and water. Rinse well and dry.

Do not use strong detergents or scouring powder or pads—they can damage plastic parts. Do not put aluminum parts such as shelves in the dishwasher—they may discolor.

Clean the outside of the appliance with mild detergent and water. Rinse and wipe dry. The condenser should be cleaned with a vacuum cleaner, accord-



When buying a refrigerator-freezer, look for these features.

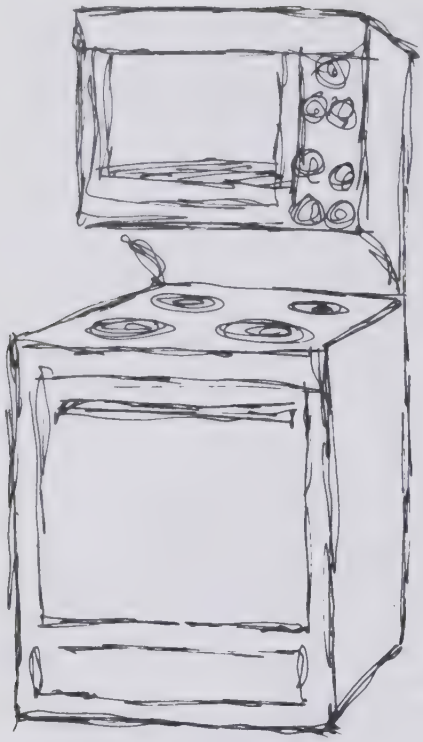
ing to instructions in the refrigerator owner's manual.

WHEN THE FREEZER STOPS

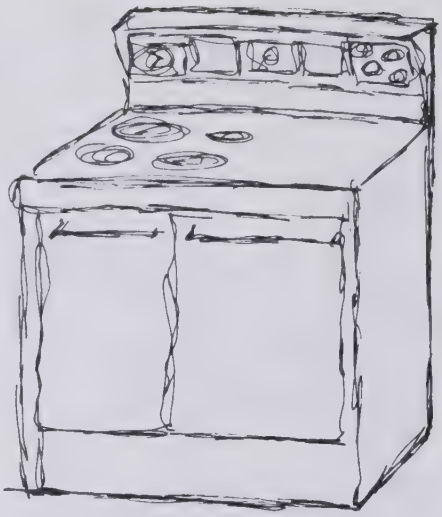
Power failures occur frequently during energy shortages and storms. When that happens, home freezers stop running. The power may be off for some time, so precautions must be taken to keep frozen food from spoiling:

- Keep the freezer closed. Every time you open it, warm air rushes in.
- Estimate length of time the freezer will not be working. If the power is off, call the utility company to find out when it will be restored. If the freezer has a mechanical failure, find out how long it will take to service it.
- Determine how long the food will keep. If the freezer is fully loaded, the food will stay frozen about two days. If it is less than half full, it will stay frozen for not more than a day.
- Use dry ice if the freezer will be out of service for more than a day. The more dry ice you use, the longer the food will keep. Put heavy cardboard on the frozen food and then put dry ice on top of the cardboard. Dry ice can be harmful if touched with bare hands. Be sure to wear heavy gloves when handling dry ice so you are not injured.

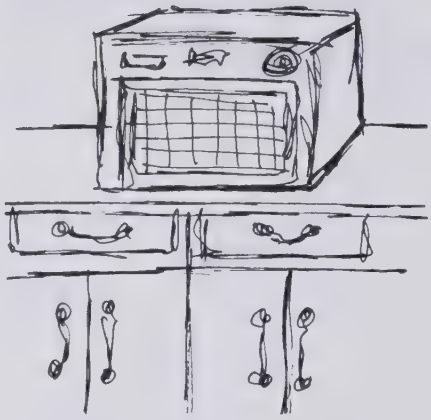
Friends and neighbors may have space in their freezers to



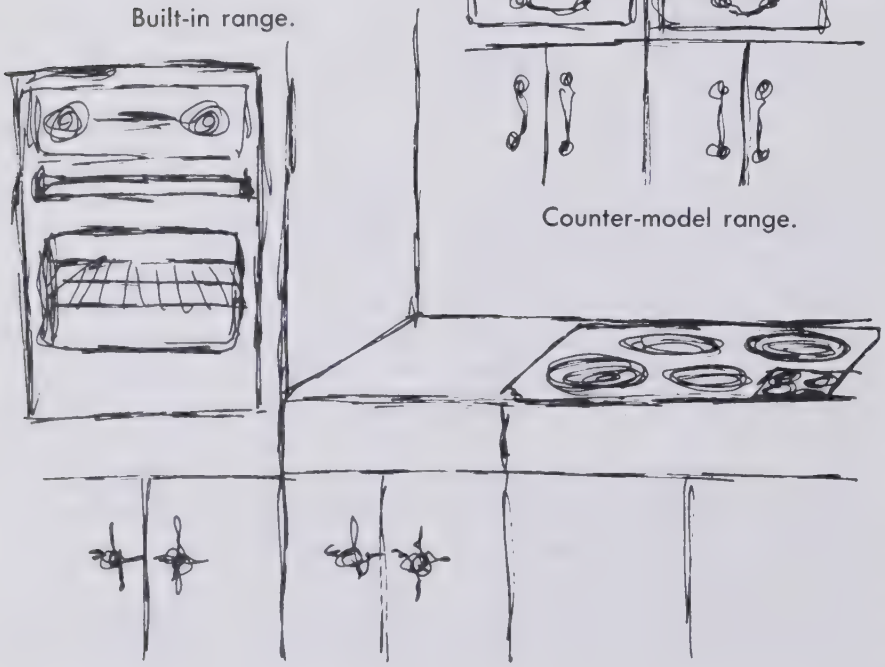
Double-oven range.



Free-standing range.



Counter-model range.



Built-in range.

store your food if the freezer is out of order. You may also try calling a local freezer-locker plant to see if they have room to store your food.

Range

A range usually has four surface cooking units varying in size, an oven, and a broiler.

Some ranges have glass ceramic tops which cover the surface units and are used to cook on. These are easy to clean and look attractive in the kitchen.

Some surface units are thermostatically controlled. They have a temperature control so you can select the temperature you want for the type of food you are cooking.

Ovens also have thermostatic controls so you can select the exact temperature needed. The broiler may have a thermostatic control or just an "On-Off" control.

Three types of ranges are available:

- *Free-standing.* Varies in size from 60 to 100 cm [24 to 40 inches]. Some have one oven and broiler along with extra storage space while others may have two ovens. A 75 cm [30-inch] range may have two ovens—a large one below and a small one above the surface units.
- *Built-in.* Has two separate units—oven and surface cooking units—built into kitchen cabinets. Requires more space than a free-standing range.



Frigidaire

Optional features on a range include a glass ceramic cook top and a solid state touch control system for selecting temperatures and cooking time.

• *Counter Model.* A small oven, usually used as an extra oven, which can be kept on a counter. Can be a conventional oven or microwave.

Some ranges have self-cleaning ovens. Two types are available:

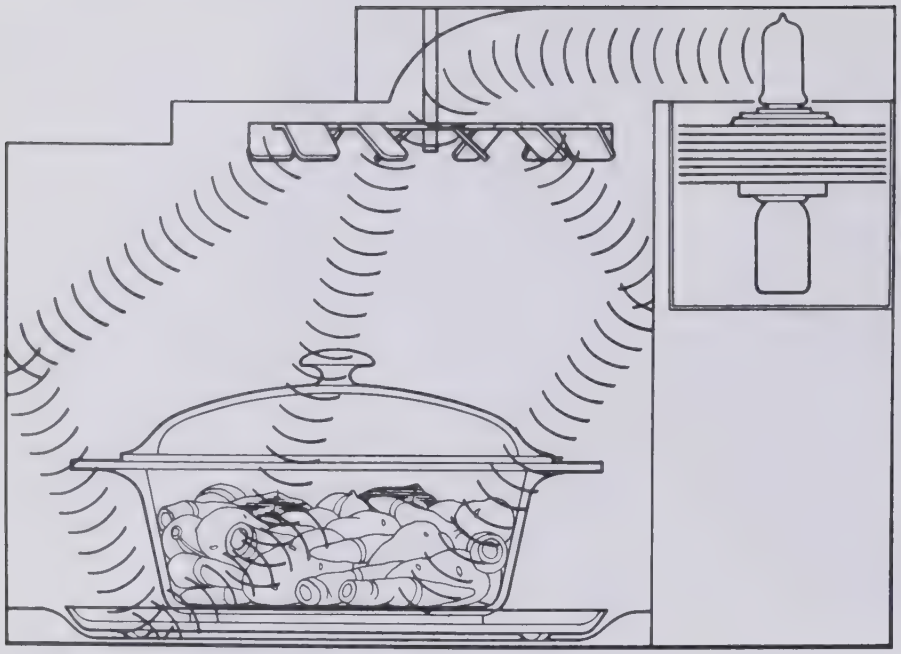
• *Self-cleaning.* Has a control and lock to start cleaning process. Uses high temperatures, over 380 °C [750° F.], to clean. Added insulation keeps exterior cool during cleaning. Leaves only a small amount of ash in oven. Adds to price of range.

• *Continuous Cleaning.* Has coating on oven wall, generally dark, dull, and slightly rough. Food spatters will spread on coating and oxidize over a period of time. Oven walls should be cleaned only with plain water. Walls never appear as soiled as regular oven but do not look as clean as those in self-cleaning oven. Adds to purchase cost, but not as much as self-cleaning oven. Does not require extra insulation.

Ranges also offer such optional features as clocks, timers, automatically controlled ovens, electric outlets, and oven and broiler rotisseries.

Ranges use either gas or electricity for fuel. Both types perform well. You may have your choice of either, but in some areas you may be limited to only one fuel.

• *Gas Range.* Needs to be connected to a gas line. Can use either natural gas or bottled propane gas. Also needs a 120-volt outlet for electric accessories such as lights and timers. All gas ranges have small pilot lights from which surface burner units and oven and broiler



Frigidaire

Microwave oven. Microwaves of energy are generated by magnetron tube, shown at upper right. The waves travel toward the oven where they strike a slowly rotating fan (upper center). The fan blades reflect the microwaves, bouncing them off walls, ceiling, and bottom of oven. Microwave energy causes food molecules to vibrate against each other, producing friction. The friction creates heat and cooks the food.

burners ignite when they are turned on. Broiler is usually in a separate compartment, located either below the oven or next to it.

• *Electric Range.* Must be connected to a 240-volt electric outlet. Oven has heating elements at top and bottom so same compartment can be used for baking and broiling, but not at the same time. Electric surface units cook by direct contact with pan. This means as much of the pan bottom as possible must be in contact with the unit. Pots and pans with flat bottoms make good contact and give best results on an electric range.

Both gas and electric ranges come in decorator colors as well as white.

MICROWAVE OVEN

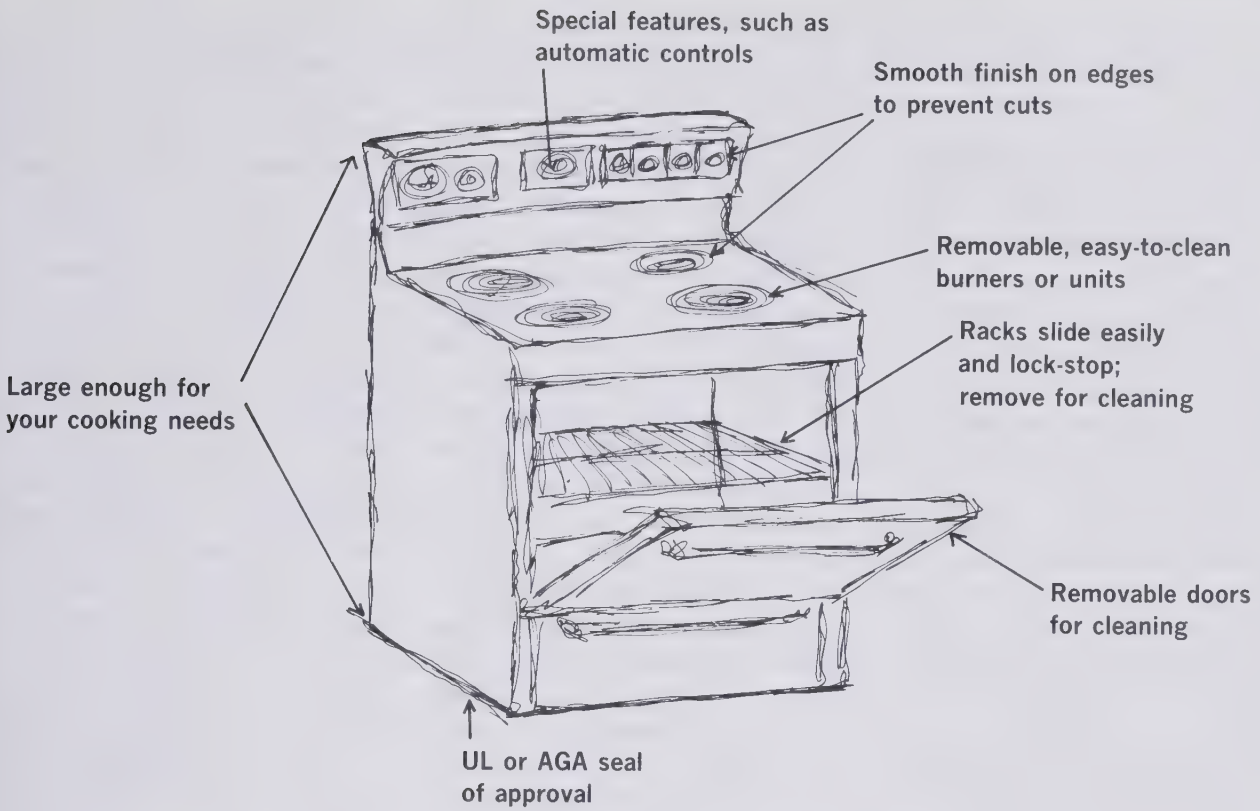
A microwave oven cooks with very tiny waves of energy called *microwaves.* These are generated by a *magnetron tube* (magnetically controlled and electronic) located in the oven. The waves are reflected by a slowly rotating fan, which bounces them off oven walls, ceiling, and bottom to the food. The microwave energy causes food molecules to vibrate against each other, producing friction. The friction creates heat and cooks the food.

In a conventional oven, food heats on the outside first and then begins to heat slowly toward the center. In the microwave oven, the food begins to cook on the inside almost as soon as it does on the outside. This speeds up the cooking process considerably so foods cook in a fraction of the conventional time. The oven shuts off automatically when the door is opened.

One disadvantage of microwave cooking is that foods do not brown. Many ovens, however, have browning units which brown the foods as they cook.

Not all foods can be prepared satisfactorily in a microwave oven because it cooks so fast. Baked goods such as breads, cakes, and cookies as well as eggs and broiled steaks and chops cook better in conventional ovens.

Besides saving time, microwave ovens have another advantage. Food can be cooked in any type of container except metal. You can use glass, paper, and most plastic containers. These materials allow the microwaves to pass through to the food. The microwaves affect



When you buy a range, look for these features.

only the food, not the container. The container, however, will heat up from the food as it cooks. Metal containers cannot be used because they reflect the microwaves away from the food so it will not cook.

Ranges can be purchased in combinations—a microwave oven with either electric or gas surface units and second oven.

CONVECTION OVEN

A convection oven is a conventional oven with fans which circulate the heated air rapidly. The rapid circulation speeds up the cooking process. Foods cook faster than in a conventional oven but not nearly as quickly as in the microwave oven. This type of oven has been used for years in the food service industry and has recently been introduced to the consumer market.

BUYING A RANGE

When you buy a range, remember you will want to keep the appliance for a fairly long time. Consider these points:

- Does it have the features you need and want? If you do a great deal of cooking, you may want a range with two ovens. If you work, automatic oven controls may be for you.
- Is it easy to clean? Does it have easily removable parts for thorough cleaning such as removable surface units, doors, and controls?
- Is is safe? Does it have the approved seals, either UL or AGA, depending on the fuel? Do oven racks slide out easily and lock in place? If they do not, you can accidentally pull the rack out along with the food on it. Does it have sharp edges

on surface units, the frame, or controls on which you can cut yourself?

USE AND CARE OF RANGE

Study your owner's manual carefully and follow the directions.

Place the pan on the surface unit first and then turn the control on. Never turn a surface unit on before placing the pan on it. It is a waste of energy and can also be dangerous.

Most ranges have a *porcelain enamel* finish. This is glass fused on steel and is breakable if misused. Avoid hitting it with a utensil or dropping a hard object on it. If spills occur, wipe them up immediately. Do not use cold water on a hot range as the porcelain may crack.

Clean the range regularly. Wash removable parts in mild, warm detergent. Rinse and wipe dry. If gas burners are clogged, use a metal pin or wire to clean them. Do not use toothpicks—they may break off and block the openings.

Clean the oven right after using. Otherwise, spatters bake on and will be hard to remove. If the oven is not self-cleaning or microwave, use a commercial oven cleaner when needed.

If you have a gas range, you will have to relight the pilot if it goes out. Follow directions in the owner's manual for relighting the pilot.

Older gas ranges may not have pilot lights and may have to be lighted manually. Use extreme caution when lighting a burner—whether in the oven or on the top of the range. Strike the match *first* and then turn the control on. If you turn the control on first, gas will accumulate and you may have an explosion.

- *Microwave Oven.* Remove spatters with a paper towel or damp cloth right after cooking. *Never use a commercial oven cleaner on a microwave oven.* The door seal must be tight to prevent harmful radiation from escaping. Keep the metal and plastic parts on the door clean to assure a tight seal. Clean door parts with a damp cloth. Never use abrasives such as cleansing powder or scouring pads—they mar the surface. Never lean on the door or put pressure on it—it may get out of line and not seal properly.

Dishwasher

The automatic dishwasher not only helps with after-meal cleanup, but it also increases sanitation. According to a study by the University of Louisville School of Medicine, the average bacteria count for all machine-washed dishes in their study was less than one per plate. The bacteria count on dishes washed by hand during the same test averaged 390 per plate.

There are two types of dishwashers:

- *Built-in.* Installed under the kitchen counter.
- *Portable.* Has casters so it can be rolled to sink for use, then stored wherever convenient. Available as top-loading or front-loading. The front-loading ones can be converted to built-ins. Practical for people who rent or move frequently.

A dishwasher does not fill completely with water the way a clothes washer does, so it uses a relatively small amount of water. It fills with about 9.5 ℓ [2½ gallons] of water, which is circulated many times under pressure. The force of the water scrubs the dishes during washing and rinsing. The total amount of water used varies from 22.7 to 72 ℓ [6 to 19 gallons], depending on the number of washes and rinses in the cycle.

Dishwashers have a number of cycles, depending on the manufacturer and model. Cycles include normal, short, or single-wash cycles for average soiled loads; power scrub for heavily soiled pots, pans, or casseroles; gentle for fine china and crystal; and plate warmer for warming plates just before serving a hot meal.

Dishes must be loaded in the dishwasher so they do not interfere with the circulation of the water. Follow instructions in the owner's manual for best results.

For a dishwasher, you will need an ample supply of hot water, from 60 °C to 70 °C [140° F. to 160° F.]. You will also

need good water pressure to provide the force needed to scrub the dishes. Some dishwashers have a hot water booster or heating element to keep water hot during the cycle.

A dishwasher is plugged into any standard 120-volt outlet. It also requires a drain. Built-in models are connected to a drainpipe or to the sink, sometimes through the disposer. Portables drain into the sink.

Hard water can cause spots on glasses and dishes and accumulations of minerals in the dishwasher itself. If the water is not softened, a wetting agent can be used to reduce water spots.

USE AND CARE OF DISHWASHER

For efficient use of energy, use the dishwasher only when you have a full load. For single people or small families, dishes can be allowed to accumulate for several days until there is a full load. First, be sure to rinse the dishes thoroughly so food particles do not dry on. Do not, however, overload the dishwasher—it will not clean dishes thoroughly.

Remove food particles from dishes and empty liquids from glasses before loading them into the dishwasher. Soiled sides should face toward the source of water. If any pieces have recessed bottoms, angle them so the water drains off. Put silverware into the basket with sharp points down. Be sure these items do not touch each other or they will not wash properly. Large pieces such as pans or platters should not block the washing action of the water.

Use only an automatic dishwasher detergent. Any other detergent foams and cuts down on the washing action.

When you run the dishwasher, avoid doing laundry, taking a shower, or watering the lawn. You will then be sure to have an ample supply of hot water at a good pressure.

The dishwasher is self-cleaning, but the filter should be cleaned occasionally. In hard-water areas, a lime deposit may form on the inside. You can use a commercial cleaner or pour 2 cups of vinegar into the empty dishwasher, omit detergent, and operate on a light wash cycle.

Periodically, wipe the outside with a damp cloth.

Food Waste Disposer

A food waste disposer consists of a container with sharp cutting blades at the bottom. It is installed in the sink and connected to the drain. It operates electrically and grinds food waste into small particles. Cold water must be run while the disposer is working. The water hardens grease so it can be broken up and also carries the waste down the drain.

Some localities require food waste disposers while others prohibit their use.

Two types of disposers are available:

- *Batch Feed.* The cover is the switch control. A small quantity of food is put in the disposer and cold water turned on. The cover is put on and turned to the proper position to start the disposer. This is the safest type since it prevents people from putting their fingers into the disposer while it is operating.
- *Continuous Feed.* This operates by a wall switch. A flexible cover is used on the disposer to prevent food particles from flying out during the grinding process.

All disposers have a reset button, usually located on the bottom of the disposer under the sink. If too much food is put in or food gets jammed between the blades, the disposer stops working. After the food has been removed, the reset button must be pressed for a specified length of time before the disposer will work again. Some disposers have a reverse action so blades can turn in the opposite direction to dislodge food.

USE AND CARE OF DISPOSER

Most food waste can be ground in the disposer. Avoid large, heavy bones, because they put too great a strain on the unit and may jam the blades. Small bones, however, help to keep the blades sharp.

Always run cold water when using the disposer. When the disposer is turned off, allow water to run for about a minute to be sure all particles are washed away.

If the blades jam, follow directions in your owner's manual for freeing them.

Before turning the disposer on, check to be sure that spoons, knives, or other foreign objects have not accidentally fallen in. They can damage the blades. Do not put anything but food waste in the disposer.

Never put your hand in the disposer while it is running.

Do not run the disposer without water—you can burn out the motor.

Do not pour lye or any other chemical drain pipe cleaners into the disposer.

Trash Compactor

A trash compactor operates electrically. Trash is stored in a disposable bag in the compactor until full. The compactor mashes or compacts trash to about one-fourth its original size. The compactor should be used for household waste such as paper, cartons, bottles, and cans. It should not be used for combustibles and for garbage or other items which create very strong odors when left at room temperature.

All compactors have a safety lock so they cannot be opened when the machine is operating.

A compactor can be either built-in or free-standing. Two types are available:

- *Drawer-Loading.* The bag rests in a drawer which pulls out of the front. The bag must be lifted out of the container.
- *Front-Loading.* A front door opens or tilts. A removable container is lined with a bag. The container must be removed and the bag lifted out.

Compactors may have spray deodorizers to keep odors to a minimum. They may also have sanitizing sprays.

Compactors come in different sizes, so be sure to get the right size for your needs.

The compactor is best located in an area where the most household trash accumulates. This is usually the kitchen, but it may also be in the utility room, laundry area, or garage.

USE AND CARE OF COMPACTOR

Operate the compactor only when the bag is full. Read the owner's manual to determine exactly what kind of materials should not be compacted.

When trash is compacted, remove from unit and insert another disposable bag.

Let's Explore and Report

- Investigate the different kinds of loans available in your area when buying major appliances. Compare the interest rates.
- Compare the features available on a gas range and on a similarly priced electric range. Which would you select if you had a choice? Why?

PORTABLE ELECTRIC APPLIANCES

Look for these terms

portable electric appliances
rebuilt appliances
reconditioned appliances

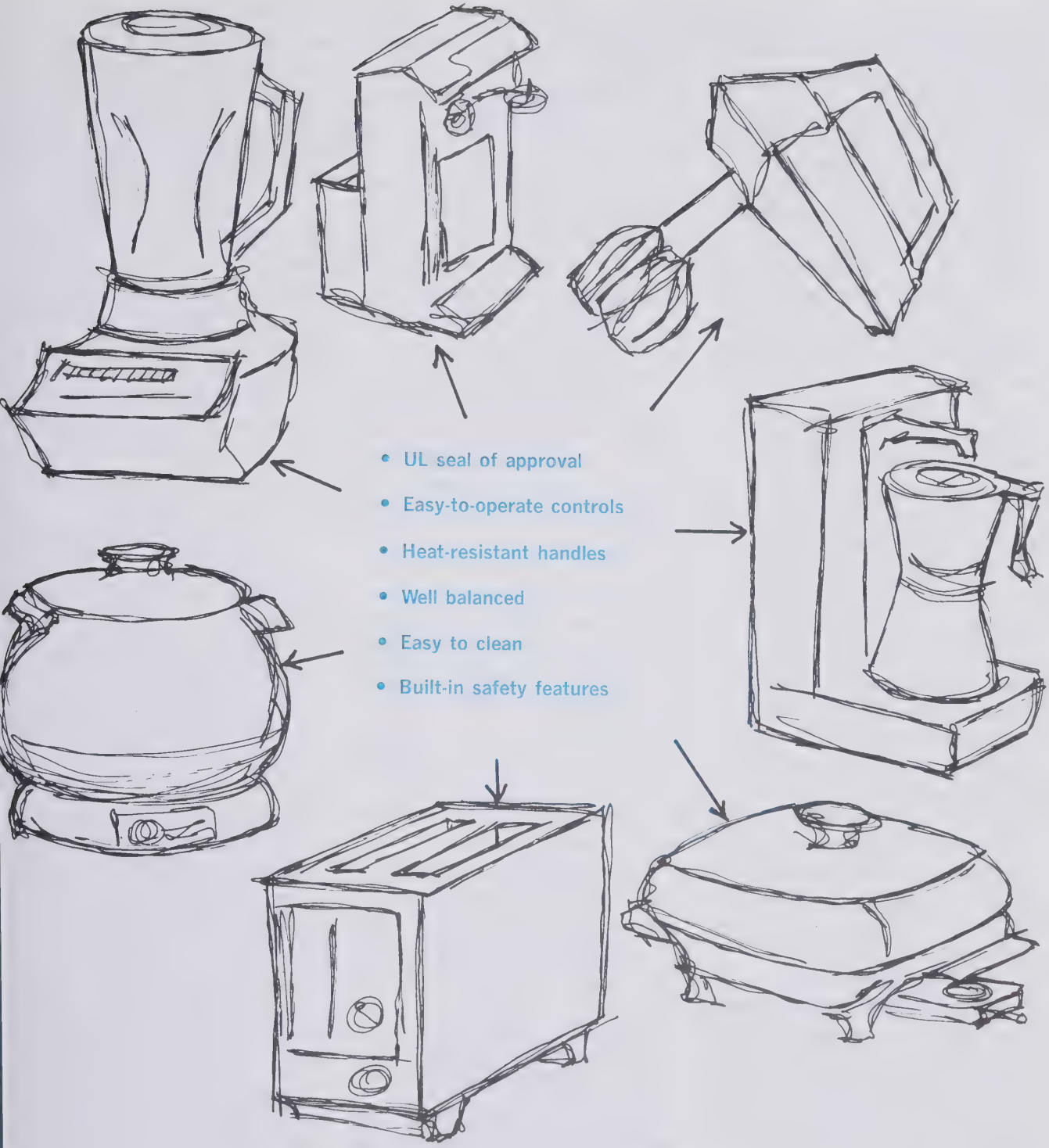
Small or *portable electric appliances* can be used on a counter or table and moved from place to place. They are practical and can save time and energy. They provide extra cooking capacity and can serve as a substitute for some of the major appliances. Many can be used for both cooking and serving.

Buying Portable Appliances

Portable appliances are available for many jobs in the kitchen, including mixing, blending, cooking, cutting, and serving.

When you buy portable appliances, keep the following in mind:

- Will the appliance fill a need or can an appliance you already have do the same job?
- Can a non-electric tool do the same job, thereby saving fuel?
- Will you use the appliance often enough to justify the cost?



Look for these features when you buy portable electric appliances.

- Do you have the necessary storage space when the appliance is not in use? Do you have space to leave it out on the counter, if necessary? Can you store it where it will be convenient to reach? Will you forget about it and not take the trouble to get it out and use it?
- Does the appliance have the UL seal? If it does, be sure the seal is for the appliance. Sometimes only the cord has the UL seal.
- Are the controls easy to operate?
- Are handles heat-resistant and comfortable to hold?
- If the appliance is to stand on a counter, does it rest firmly or can it be tipped easily?
- Can it be easily cleaned? Can it be fully immersed in water? Are handles, lids, and other detachable parts easily removed, cleaned, and stored?
- Does it have built-in safety features, such as light signals and automatic shut-off switches?
- Does the dealer provide service or must the appliance be shipped to another city for repair?

Use and Care of Portable Appliances

Read the owner's manual to be sure you use the appliance properly and safely.

- If the temperature control is detachable, plug it into the appliance first before connecting it to the wall outlet. To disconnect, remove first from the wall outlet and then from the appliance.
- Turn appliance off when plugging in or disconnecting from the wall outlet.
- When disconnecting the appliance, always pull the plug and not the cord. If you grasp the cord, you can pull it out of the plug and start a fire.
- If you get a shock from an appliance, disconnect it immediately and have it serviced.
- Keep electric cords in good repair.
- Unplug a heated appliance right after use and allow it to cool before cleaning and storing.
- Clean an appliance after every use.
- Never immerse an appliance in water unless it is labeled "Immersible." You can damage the appliance and create a safety hazard.
- Store appliances within easy reach. Those you use frequently can be stored right on the counter.
- Handle cords with temperature controls carefully. Do not bang or drop them—you may damage the control and the temperature will not be accurate.

BUYING USED APPLIANCES

Buying a used appliance involves risk. Some may be almost like new. Others may be worthless.

A *rebuilt appliance* means it has been checked, repaired, and is in working condition. A *reconditioned appliance* means it has been cleaned, perhaps painted, and is in working condition. A used appliance sold "as is" means it may or may not be clean and may not even work.

When buying a used appliance, first look at new appliances. Check the price range and features. This will give you a basis for comparing the used ones. When buying a used appliance, look for:

- UL safety seal if electric; AGA seal if gas.
- Plug, cord, and wiring insulation in good condition.
- Parts and finish in good condition. No rust, dents, scratches, or other damage.
- Cleanliness.

Where should you look for used appliances?

- *Private house sales.* Usually advertised in newspaper classified advertisements. Generally offer the newest model appliances at lowest prices. Also look for notices of private sales on community bulletin boards in stores, laundromats, and other business places.
- *Appliance or department stores.* Some take older models in as trade-ins. They are cleaned up, repaired, and offered for resale. Sometimes the store gives a warranty.
- *Secondhand stores.* Most have appliances for sale but

quality and prices vary. There is usually no guarantee the appliance will work.

- *Independent repair shops.* Some stores sell their trade-ins to local repair shops. They recondition the appliances and sell them.
- *Household movers.* Periodically, movers have auctions to sell unclaimed household goods held in storage.

If you buy a used appliance, it may not have an owner's manual with it. Write to the manufacturer, giving the model and serial numbers, and request information on how to use and care for the appliance.

Let's Explore and Report

- Make a list of the different kinds of portable appliances available in a housewares department and what they do. Compare their functions with those of the major kitchen appliances. Which portable appliances do the same jobs as the major appliances?
- Select a portable appliance for a comparison test. In a housewares department, examine different brands of this appliance. Make up a chart showing how they compare regarding features, safety, ease of use and cleaning, and price. Which would you select? Why?

KITCHEN EQUIPMENT

Kitchen equipment includes cooking and baking utensils as well as the small hand-operated tools used to measure and prepare food.

Cooking and Baking Utensils

Utensils for cooking and baking should:

- Conduct heat evenly.
- Maintain their appearance.
- Be easy to clean.
- Last a relatively long time.
- Be reasonably priced.

Utensils are made from metal, glass, and earthenware. Each material has advantages and disadvantages and may require special care. See chart on page 268.

When selecting cooking and baking utensils, look for these features:

- *Handles.* Should be heat resistant. End of handle on saucepans and frypans should have hole or hook so utensil can be hung. Handle should be fastened so screws can be easily reached to tighten in case they loosen. Handles on casseroles and baking dishes should be large enough so you can grasp them with a potholder.
- *Construction Features.* Check balance of utensil. If handle is too heavy, it may unbalance the pan and cause it to tip. Be sure pan bottom is flat for good heat conduction. Edges should be smooth. Metal should be heavy enough so pan does not warp. Look for sharp, dangerous edges and for crevices in which food and dirt can accumulate.
- *Lids.* If lid comes with pan, it should fit well. Handle should be heat resistant and easy to grasp. Avoid handles that are recessed, short, or that fit too closely to the lid—you may not be able to grasp them with a potholder. You can burn yourself if you grasp it without a potholder.

Cooking and baking utensils include:

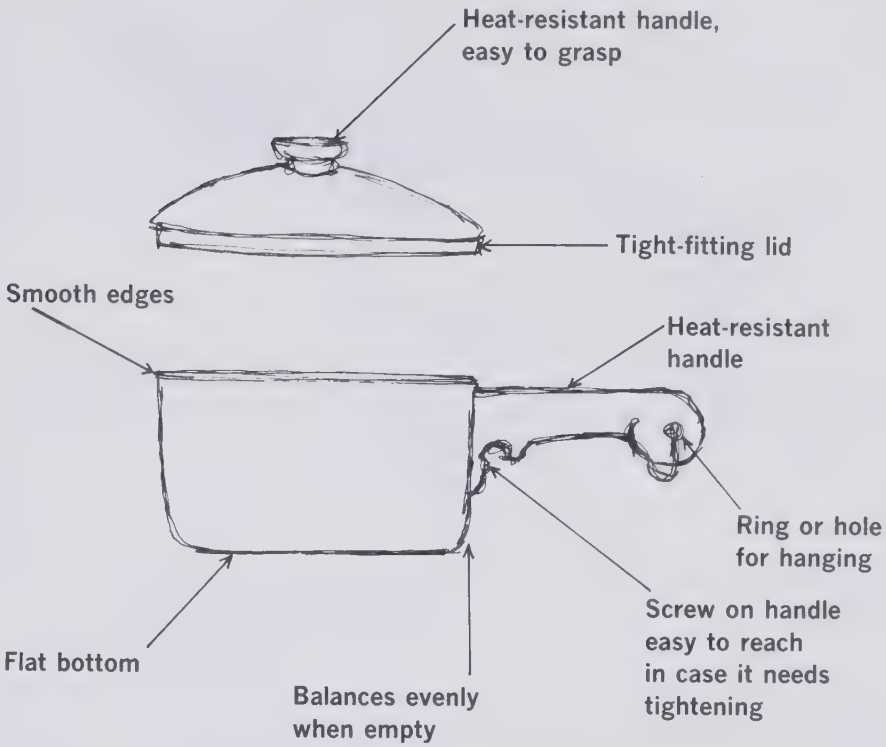
- *Saucepans and Pots.* Saucepans usually have one handle while pots have two. May have lids to match. Pans made of metal, glass, or enamel. Pots usually made of metal. Come in assorted sizes from small 0.5 ℓ [1-pint] pan to large 11.4 ℓ [12-quart] pot.
- *Frypans.* Can be made of metal or glass ceramic. Come in assorted sizes, usually given in inch diameter, such as 10 inches. Some have matching lids.
- *Casseroles.* Can be made of many different materials. Usually measured by quart sizes. Most common are 0.5, 1.4, 1.9, and 2.8 ℓ [1, 1½, 2, and 3 quarts]. Most come with matching lids.
- *Baking Pans.* Usually made of metal but some are made of oven-proof glass. Different types of specialized pans for baking, such as bread pans, cake pans, cookie sheets, pie pans, angel food cake pans.
- *Roasting Pans.* Large, heavy pans, either rectangular or oval. Usually have a trivet or rack.

MATERIALS FOR UTENSILS

Material	Advantages	Disadvantages	Care
Aluminum *Sheet:* Comes in different thicknesses. *Cast:* Makes heavier utensils than sheet aluminum.	• Conducts heat rapidly and evenly. • Acid foods remove darkening. • Durable.	• Minerals in water and food cause darkening and pitting. • Dishwasher detergent stains and darkens.	• Soak, if needed. • Clean in hot detergent water and scour. • Do not put in dishwasher.
Cast Iron	• When seasoned, keeps food from sticking. • Holds heat well and distributes it evenly.	• Heavy. • Will rust if not wiped dry when stored.	• Must be seasoned when new. • Soak, if needed. • Wash in hot detergent water; dry well. • Never scour as it will remove coating of grease and pan will need to be reseasoned.
Copper *Do not use for cooking unless lined with tin or chrome.*	• Good conductor of heat.	• **Poisonous if not lined with tin or chrome.** When heated, copper reacts with food to form poisonous compounds.	• Clean in hot detergent water. • Do not scour—lining is thin and can be scoured away, exposing copper.
Earthenware	• Attractive. • Retains heat so food is kept hot after being removed from oven.	• Conducts heat slowly and unevenly. • Chips and breaks easily.	• Soak, if needed. • Clean in hot detergent water. • Do not scour.
Enamel Glass baked on metal.	• Attractive decorator patterns. • Maintains heat distribution of base metal.	• Chips easily. • May be heavy if iron is base metal.	• Soak, if needed. • Clean in hot detergent water. • Do not scour.
Glass	• Can see food in container. • Attractive designs.	• Chips and breaks easily. • Conducts heat unevenly. • Must use small wire trivet on electric surface unit. • Cannot hold up under extreme temperature changes.	• Soak, if needed. • Wash in hot detergent water. • Do not scour.
Glass Ceramic	• Can be used to freeze food. • Can be taken from freezer and put right into oven. • Attractive. • Durable	• May develop hot spots if source of heat uneven—certain areas heat up more than others, cause food to stick.	• Soak, if needed. • Clean in hot detergent water. • Scour.
Non-Stick Surface	• Keeps food from sticking to pan. • Durable if used properly.	• May be damaged by metal spoons or forks, or metal scouring pads.	• Soak, if needed. • Clean in hot detergent water. • Do not scour with metal pads or abrasive powders.
Stainless Steel	• Will not rust, corrode, or stain. • Keeps brightness under normal care. • Durable and attractive.	• Conducts heat slowly and unevenly. • Develops hot spots. • May darken if overheated.	• Soak, if needed. • Clean in hot detergent water. • Scour.
Stainless Steel with copper- or aluminum-clad bottom	• Heats quickly and evenly. • Combines advantages of both metals. • Durable • Attractive	• Copper discolors and needs to be cleaned regularly.	• Soak, if needed. • Clean in hot detergent water. • Use copper cleaner on copper bottom. • Scour aluminum bottom.

BUYING COOKING AND BAKING UTENSILS

- Buy the size you will use most.
- Select the material that will give you the best performance.
- Look for quality construction. Don't buy by price alone. A cheap aluminum pan may have to be replaced in a few months whereas a more expensive one may last for years.
- Do not let an attractive color or design lure you into buying pans that may not be durable or give the best performance.
- Consider the weight of the pan. Remember, food will add to the weight.
- Keep storage space in mind. If the pans must be stacked, select those with tapered sides so they stack easily and compactly.

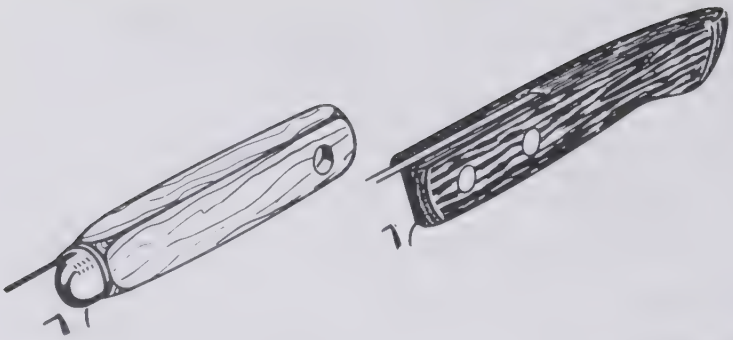


Look for these features when you buy pans.

Food Preparation Tools

Housewares departments have rows and rows of food preparation tools. Many of these can be considered unnecessary gadgets and dust collectors, but some are essential in food preparation.

- *Measuring Cups.* Two types are needed—Mary Ann cups and a glass measuring cup. The Mary Ann cups are a set of four cups—240 mℓ [1 cup], 120 mℓ [½ cup], 80 mℓ [⅓ cup], and 60 mℓ [¼ cup]—made of metal. They are used for measuring dry ingredients. Each cup holds the exact amount and the ingredient is measured level with the top. Glass or clear plastic measuring cups are used to measure liquids. They have a pouring spout and a small headspace at the top to prevent spills. They show measures on the sides—ounces and cups on one side and liters on the other. They come in 240 and 480 mℓ [1- and 2-cup] sizes.
- *Measuring Spoons.* Come in a set of four spoons—15 mℓ [1 tablespoon], 5 mℓ [1 teaspoon], 2.5 mℓ [½ teaspoon], 1 mℓ [¼ teaspoon]. Usually made of metal.
- *Beaters.* Can be egg beaters or wire whisks. Egg beaters should be comfortable to hold and should turn easily. Whisks usually are made of metal and used for medium and lightweight beating jobs.
- *Cooking Spoons and Forks.* Have extra-long, heat-resistant handles. Extra-long handles help keep hands away from hot food, steam, and spattering fat. Spoons may be solid or perforated.
- *Tongs.* Made of metal. Make it easy to turn hot food in a pan or to remove it.
- *Mixing Bowls.* Made of glass, earthenware, stainless steel, or aluminum. Glass and earthenware chip and break easily, so must be handled care-



Ekco Housewares Co.

Knife on left has a driven tang, an inexpensive type of handle. It comes loose easily. Knife handle on right has a riveted tang, held by two rivets, which are longer lasting.

fully. Aluminum will darken egg white mixtures.

- *Thermometers.* Special ones available for deep-fat frying, making candy, and roasting meat. Deep-fat frying and candy thermometers clip to the sides of the pan, with the thermometer resting in the oil or candy. Deep-fat thermometers have higher temperatures than candy thermometers. Meat thermometers are inserted in roasts or poultry to show the internal temperature of the meat as it roasts.
- *Knives.* Handles can be wood, plastic, or a combination of wood and plastic. The tang or handle portion of the blade should extend into the handle at least one-third of the way and be attached with at least two rivets. Never soak knives. Wash, rinse, and dry immediately. Do not wash in dishwasher unless handle is heat and moisture resistant.

BUYING FOOD PREPARATION TOOLS

Many lists have been made of the tools needed for a "beginning kitchen." Everyone, however, has different needs, likes, and dislikes. A person who cooks just for one and never bakes will need far fewer tools than someone who enjoys baking or entertaining regularly.

When you buy kitchen tools, follow these guidelines:

- Be sure it fills the need. Do not buy a gadget you will never use.
- Look for quality construction. Avoid flimsy tools that will not stand up under use.
- If the tool is to be used for hot food, it should be heat resistant.
- Keep storage space in mind.
- Consider cost of item in relation to use.

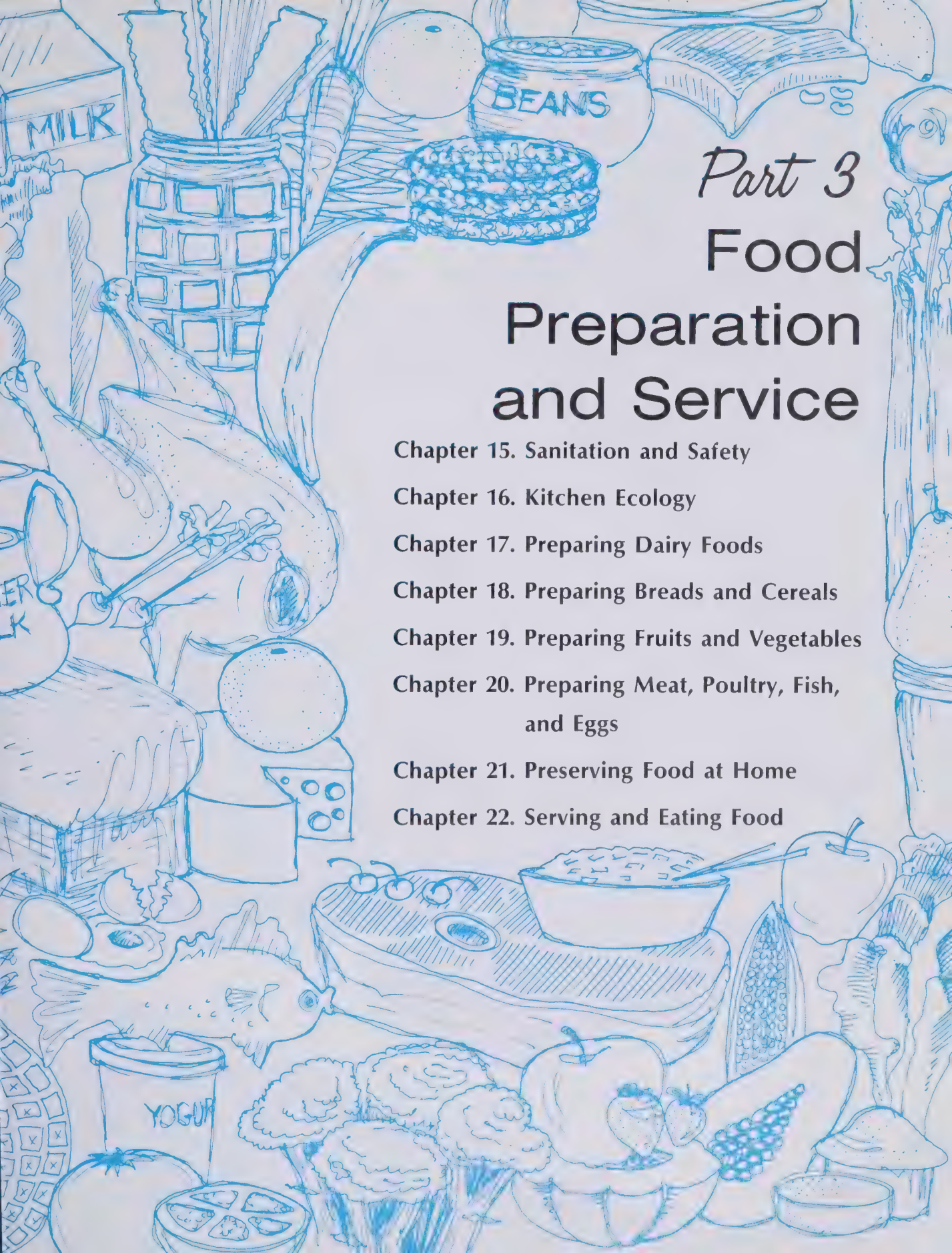
Beautifully designed cookware and kitchen gadgets tempt shoppers. Before you decide to buy, study the types of foods you usually cook. What tools do you need to prepare them? When you shop, buy only those items you need and will use.

Let's Explore and Report

- Cut illustrations from magazines and newspapers of cooking and baking utensils made from different materials. Make a poster or flip chart listing the advantages and disadvantages of each.
- Make a report of recent legislation relating to energy shortages and the use of appliances.
- Select five kitchen gadgets in a housewares department for comparison purposes. What is the function of each? How practical are they in relation to the cost?

What Would YOU Do?

- Your take-home pay is $107 a week. You are looking for a small apartment you can afford. You finally find two, but the rent does not include utilities or heat. Both are almost identical, except for the kitchens. The rent for the first one is $120 a month. The kitchen is small but completely equipped with modern range, refrigerator, sink, and two small storage cabinets. The other apartment rents for $100 a month. The kitchen is also small with a sink and an efficient arrangement of storage cabinets. However, you must supply your own range and refrigerator.



Part 3
Food Preparation and Service

Chapter 15. Sanitation and Safety

Chapter 16. Kitchen Ecology

Chapter 17. Preparing Dairy Foods

Chapter 18. Preparing Breads and Cereals

Chapter 19. Preparing Fruits and Vegetables

Chapter 20. Preparing Meat, Poultry, Fish, and Eggs

Chapter 21. Preserving Food at Home

Chapter 22. Serving and Eating Food



Chapter 15
Sanitation and Safety

To help you to . . .

- **Recognize the causes of food-borne illness.**
- **Know how to prevent food-borne disease.**
- **Identify safety hazards in a kitchen.**
- **Use safety practices to prevent accidents in kitchens.**

Preparing and eating food is usually a lot of fun. However, if you are careless when handling food or using kitchen equipment, the results can be disastrous. You can be a victim of food poisoning or have a serious accident.

Look for these terms
botulism
food-borne disease
perfringen poisoning
personal hygiene
salmonellosis
sanitation
spores
staphylococcal poisoning

orning
Keep safety and sanitation in mind when preparing food. Here, a Chinese cleaver is used to slice meat on a glass ceramic cutting surface.

SANITATION IN THE KITCHEN

Have you ever had an upset stomach or stomach cramps? You may have thought you were suffering from the flu. Perhaps you were, but it is also quite possible that you had food poisoning, also known as *food-borne disease*. Experts estimate two million cases of food-borne disease occur in the United States each year. Food contaminated with harmful bacteria does not always have an odor or an off-flavor. Thus many people are unaware of the real cause of their illness.

What Causes Food-Borne Illnesses

Food-borne illnesses are caused by certain bacteria in food. Illness is caused either by the bacteria or by harmful substances they produce called *toxins*. Sometimes toxins are heat resistant and will still be present in food which has been heated enough to kill the bacteria.

Some bacteria produce *spores*, which are almost like seeds from which more bacteria grow. Like toxins, spores are often heat resistant. Thus food may be heated, destroying the bacteria, but the spores will not be destroyed. When the food cools, the spores form more bacteria.

Limited amounts of harmful bacteria can generally be tolerated by the human body. However, the body cannot cope with excess amounts. Serious symptoms can develop. Usually, it takes from 3 to 12 hours for symptoms of food poisoning to begin, depending on the type of bacteria.

The most common illnesses are *salmonellosis, perfringen poisoning, staphylococcal poi-*

FOOD-BORNE ILLNESSES—CAUSE AND PREVENTION

Illness and Cause	Kind of Bacteria	Symptoms	Prevention
Salmonellosis. Caused by eating contaminated food or by coming in contact with a carrier.	*Salmonella.* Carried by insects, rodents, and pets, especially turtles, birds, dogs, and cats. Can live and grow in human digestive tract, causing disturbances. Grow and multiply at temperatures between 6 °C and 46 °C [44° F. and 115° F.].	Severe headache, followed by vomiting, diarrhea, abdominal cramps, and fever. Infants, elderly, and persons with low resistance most susceptible. Severe infections cause high fever and may even cause death.	• Wash raw foods thoroughly. • Keep hot foods hot—temperatures above 60 °C [140° F.] destroy bacteria. • Keep cold foods cold—temperatures below 7 °C [45° F.] do not kill bacteria but keep them from multiplying. • Keep hands, counters, and utensils clean. This stops spread and growth of salmonella.
Perfringens poisoning. Caused by eating food contaminated with abnormally large amounts of bacteria. Likely to occur when large amounts of food are not handled properly. This happens relatively often at large dinners not prepared by professional cooks, such as church suppers, community dinners.	*Clostridium perfringens.* Spore-forming bacteria grow in absence of oxygen. Spores are everywhere—in food, soil, dust, and sewage. Found in human intestinal tract and in warm-blooded animals. Cooking temperatures kill bacteria but not spores. Surviving bacteria continue to grow in cooked food if not kept at right temperatures.	Nausea without vomiting; diarrhea; acute inflammation of stomach and intestines.	• Serve cooked food immediately or keep at temperatures above 60 °C [140° F.] until ready to serve. • Serve cold food immediately or keep refrigerated at temperatures below 5 °C [40° F.] until ready to serve. • To store cooked meat, refrigerate promptly.
Staphylococcal poisoning. Caused by eating food containing the toxin.	*Staphylococcus aureus.* Transmitted by food handlers who carry bacteria. These bacteria are fairly resistant to heat. They grow in food and produce a toxin that is extremely resistant to heat. Bacteria grow fastest and produce most toxin at temperatures between 6 °C and 46 °C [44° F. and 115° F.].	Vomiting, diarrhea, prostration (tired feeling), abdominal cramps. Generally mild and often attributed to other causes.	• Bacteria growth stopped by keeping hot foods above 60 °C [140° F.] and cold foods below 5 °C [40° F.] • Toxin is destroyed by boiling for several hours or heating food in pressure cooker at 116 °C [240° F.] for 30 minutes. • Cleanliness prevents spread of bacteria.
Botulism. Caused by eating food containing the toxin.	*Clostridium botulinum.* Spore-forming bacteria that grow and produce a deadly toxin. Bacteria are found in soil and water. Spores are harmless but extremely heat resistant. In absence of oxygen, as in a sealed container, and with low-acid foods present, spores germinate. If canned food is not properly processed, bacteria produce toxin in sealed container. They can also produce toxin in low-acid foods kept in refrigerator for two weeks or more.	Double vision; inability to swallow; speech difficulty; progressive paralysis of respiratory system. About 65 percent of people who get botulism in United States die. Most cases caused by improper home canning methods. See Chapter 21.	• In home-canning, low-acid foods must be processed in pressure canner to destroy spores. Toxin is destroyed by boiling for 10 or 20 minutes; time required depends on kind of food. • Never taste or eat food from a can that is bulging, damaged, or leaking. Never eat food that does not look or smell normal. Destroy such food so children and animals cannot get to it. See pages 373, 374, "To Use Canned Food."

soning, and *botulism.* The chart on this page describes the causes and symptoms of these diseases.

How can you prevent food-borne illness in your home? Sanitation is the answer. *Sanitation* means keeping bacteria out of food through personal hygiene and proper food handling procedures. It also means keeping the food at the proper temperatures so bacteria already present do not have a chance to multiply.

Bacteria enter food two ways. Some are naturally present in the food when you purchase it.

Others get into it because of careless handling when it is prepared and served.

As discussed in Chapter 12, bacteria cannot travel by themselves. They are carried about by people, animals, and insects as well as on objects. Salmonella, for instance, can be found in food such as raw meat, poultry, eggs, and dairy products. From these it can contaminate other food in the kitchen. Salmonella are also carried by insects, rodents, and pets, especially turtles, birds, dogs, and cats.

Staphylococcus bacteria are found not only on raw meat but on the skin and in the nose and throat of people. If you are preparing food and you sneeze or cough but do not cover your nose and mouth, you can contaminate the food with staphylococcus.

Bacteria must have food, moisture, and the right temperatures in order to grow. With careless handling, these ideal growing conditions can occur in any kitchen.

The food service industry has established sanitation procedures to be used when handling food. The industry is responsible for serving wholesome and healthful food to all consumers. Every precaution must be taken to prevent food-borne illness. You can prevent food-borne illness in your home by following these guidelines set up by the food service industry.

Personal Hygiene

Personal hygiene means keeping yourself clean so you do not transfer harmful bacteria to food you are handling.

- Scrub your hands with soap and hot water before you handle any food. Be sure to clean under fingernails, where dirt and bacteria tend to accumulate.
- Have a separate "hand-wiping" towel. Do not use the same dishtowel for wiping dishes and counters as you do for wiping your hands.
- Body wastes are loaded with harmful bacteria. Always scrub your hands and fingernails thoroughly with soap and hot water after every trip to the toilet.
- If you must cough or sneeze while working with food, cover your nose and mouth with a disposable tissue or handkerchief. Scrub your hands immediately.
- Do not fuss with your hair or touch other parts of your body, such as rubbing your eyes or nose. If you do, scrub your hands immediately—you have picked up bacteria from the skin and hair.
- If you have an open cut, sore, boil, or other wound on your hands, do not work with food. Pus and other liquids seeping from the wound contain millions of harmful bacteria that can cause food poisoning. If open sores occur on other parts of your body, do not touch them while you prepare food.
- Cooking destroys bacteria. However, if you handle raw food and then cooked food, you can transfer harmful bacteria to the cooked food. After you handle raw meat, fish, poultry, or eggs, scrub your hands before working with ready-to-eat foods.
- Do not smoke while you prepare food—ashes may fall into the food.
- Dirty clothes or aprons should be changed before you work with food.
- Do not wear long sleeves that may drag into food. If you must wear long sleeves, roll them up before you begin to prepare food.

Cleanliness in the Kitchen

- Keep the kitchen area free of insects, rodents, and other pests. They leave harmful bacteria on surfaces over which they walk.
- Keep pets out of the kitchen. Pet hairs float through the air, carrying bacteria with them. Do not put pet feeding dishes, toys, or bedding in the kitchen or near any food work area. Do not wash the pet's feeding dishes along with the family dishes.
- Do not use the same utensils and tools for cooked food as you used for raw food without washing them first. If you have



Bacteria cannot travel by themselves. They are carried by people, animals, and objects. What would you do to improve the sanitation in this drawing?

worked with raw food on a table, counter, or cutting board, scrub the area thoroughly with soap and hot water to remove bacteria.

- Scrub the surface of a wooden cutting board with a chlorine bleach solution.
- When you taste food, use the tasting spoon only once, then wash it before using it again.
- Do not use your hands to mix food when a clean utensil can do the same job. If you must use your hands, as for shaping hamburgers, scrub them thoroughly first. You can also wear thin, disposable plastic gloves to protect the food.
- Wipe up spills and spots—they attract bacteria.
- Keep dirty dishes, pots, and pans away from the area where you are preparing food.
- Be sure to use clean dishcloths and dish towels.

Keep Food at Proper Temperatures

Bacteria multiply rapidly at temperatures from 7 °C to 60 °C [45° F. to 140° F.]. They grow fastest between 16 °C and 49 °C [60° F. and 120° F.]. Note that this range includes normal room temperature. For this reason, food should never be allowed to sit out on a counter or table. Although you cannot see them, the bacteria are multiplying rapidly without stopping.

Follow these guidelines for keeping food at proper temperatures:

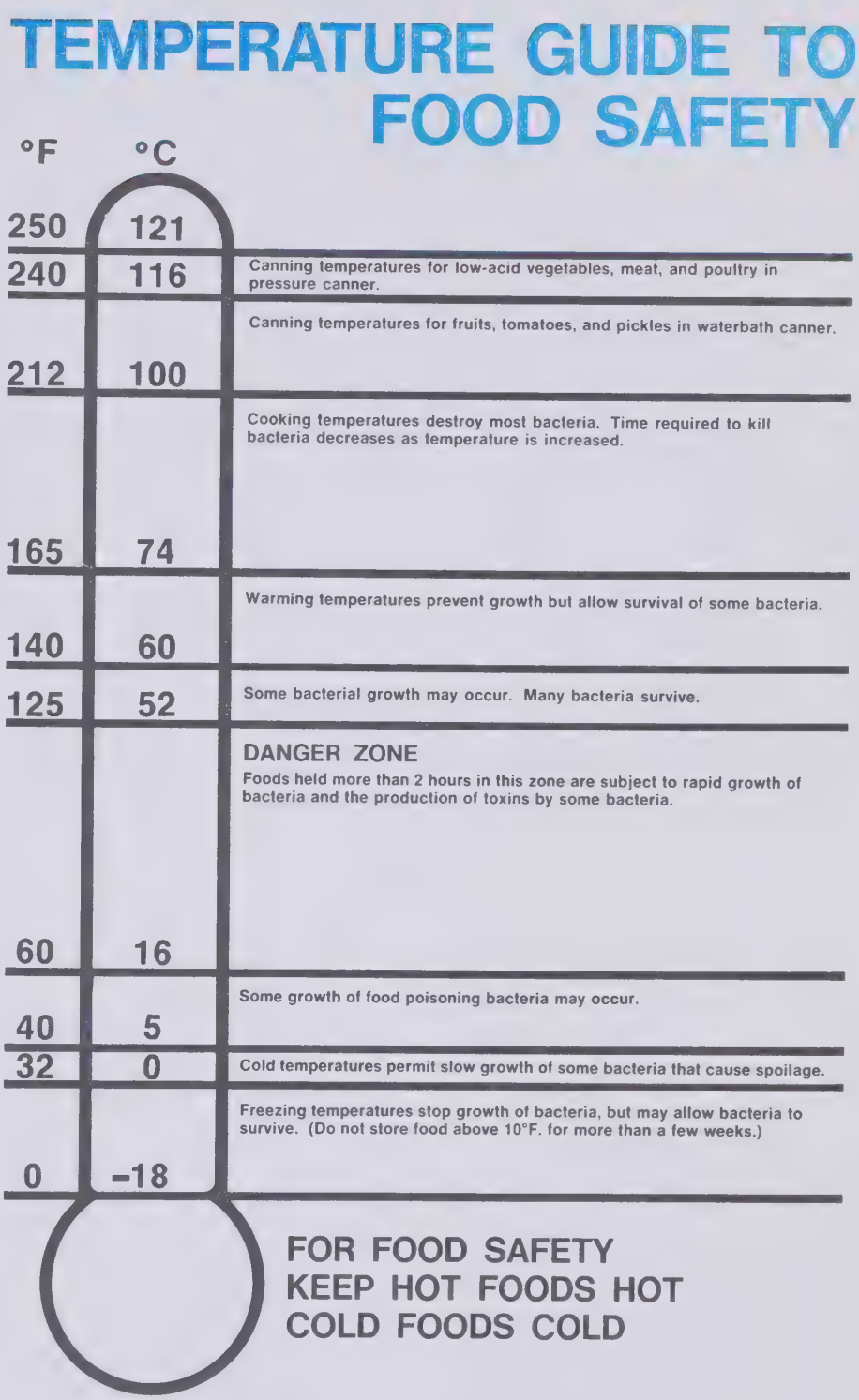
- Use proper storage for food you have just purchased. See Chapter 12.
- Keep hot food hot—above 60 °C [140° F.]—until served.
- Keep cold food cold—below 7°C [40° F.]—until served.
- After serving, refrigerate food immediately. Do not allow food to stand at room temperatures. Keep the food covered to prevent bacteria from entering.
- Do not stuff uncooked meat, poultry, or fish and hold in the refrigerator before cooking. If you make the stuffing in advance, store it separately in the refrigerator.
- Remove all stuffing from leftover cooked meat, poultry, or fish before refrigerating. Refrigerate stuffing in a separate container. Refrigerate broth or gravy immediately after the meal.
- Custards, cream and meringue pies, and cakes with rich fillings should be refrigerated as soon as they cool slightly. Do not allow them to stand at room

temperatures once they have cooled.

- Leftovers should never be just warmed up. Heat them to an internal temperature of at least 69 °C [155° F.].
- Thaw frozen foods in the refrigerator.

Food Care for Special Occasions

- *Warm Weather Outings.* Remember, bacteria grow faster in warm weather. To prevent food-borne illness at any outing—picnic or backyard barbecue—keep food at the proper temperatures. Chill food thoroughly in the refrigerator and pack while it is cold. Use insulated bags or chests for all perishable food. Fill plastic containers with ice cubes and place next to food to help it stay cold. If the food must keep for four hours or more before you eat it, take food that is less perishable. Even if chilled, food can become extremely warm in a few hours if the temperature is 32 °C [90° F.].
- *Holidays and Parties.* Do not try to feed more people than you can handle. If you do, you may overload the refrigerator so the temperature will not be cold enough to keep bacteria from growing. If you are serving a buffet, do not put all the food out at once. Use several small serving dishes for each kind of food. While one is on the table, keep the other refrigerated. Bring out fresh servings fre-





Florida Dept. of Citrus

Hot foods, such as meat loaf, should be kept hot. Be sure cold foods, such as salad and pie, are kept cold.

quently to replace those partly used. Serving dishes for salads, deviled eggs, and dips can be kept cold by placing them in cracked ice. Be especially careful with rich mixtures, such as eggnog—if they stand for an hour or so at room temperature, they breed bacteria quickly. Keep them at correct temperatures and replace the supply often.

Cooking for a Crowd

Large quantities of food heat more slowly and cool more slowly than smaller quantities do. As a result, they are more likely to have the temperatures required for bacteria to grow. If you are helping with a church social or a community dinner, be sure these practices are followed:

- Use procedures for personal hygiene recommended earlier in this chapter.
- Keep food, utensils, and work areas clean.
- Be sure food is thoroughly cooked. When roasting a turkey, roast the stuffing separately. Do not roast turkey partially one day and finish the roasting process the following day. If time is a problem, have the turkeys cut in halves or quarters—they will roast faster and there will be less chance of bacteria contamination.
- Keep foods at proper temperatures.
- Use disposable dishes. If dishes have to be washed by hand hurriedly to use a second time, they will not be properly cleaned.
- Figure out how much refrigerator space you will need to store food. Too much warm food in the refrigerator can raise



National Broiler Council

Outdoor picnics can be enjoyable if food is kept at proper temperatures. Even if well chilled to begin with, food can become extremely warm if left outdoors for a few hours on a hot day.

the temperature and allow bacteria to grow. If you do not have enough refrigerator space, either borrow or rent space. If you cannot do either, change your menu so you will use fewer refrigerated foods.

- Never put deep containers of hot food in the refrigerator—the food chills slowly. Put hot food in shallow containers so it will chill quickly.
- Do not keep prepared food in the refrigerator more than a day or two. If you must prepare it further in advance, freeze it.
- Use two cutting boards—one for raw meat, poultry, and fish, and the other for ready-to-eat foods such as sandwiches, salads, and cooked foods. This will keep bacteria in raw food from spreading to the ready-to-eat food.

Let's Explore and Report

- Analyze your cleanliness habits as you prepare food at home. How can you improve them? Compare notes with others in class.

SAFETY IN THE KITCHEN

Look for these terms
carbon monoxide
U.S. Consumer Product Safety Commission

Accidents do not just happen. They are caused either by carelessness or by not knowing

the proper procedure to use when working.

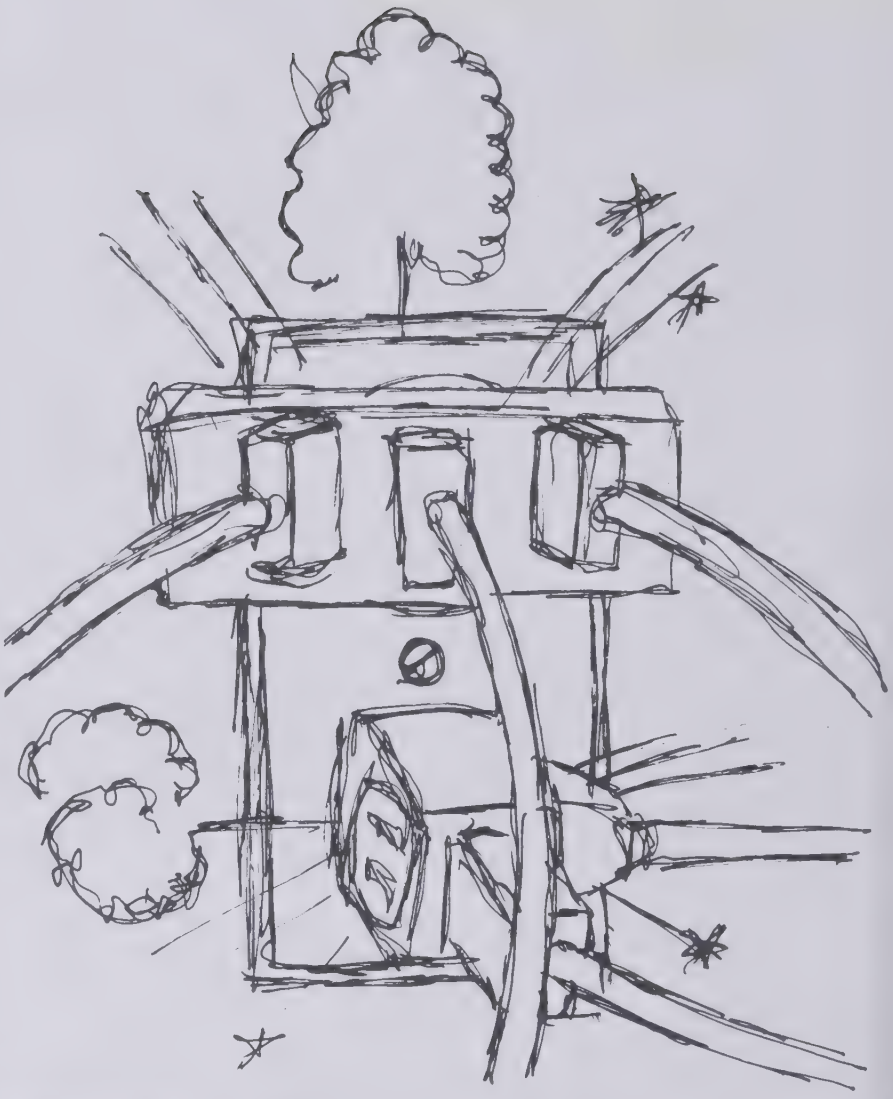
Safety is just as important in your kitchen as it is in the food service industry. Food service workers take many precautions to be sure they are not injured on the job. Some of their practices can help you work more safely in your kitchen.

The most common accidents occurring in kitchens are burns, falls, cuts, and poisoning. To prevent any type of kitchen accident:

- Keep the kitchen clean.
- Keep appliances and equipment in good working condition.
- Use appliances and equipment correctly.
- Practice efficient and safe work habits.

Burns

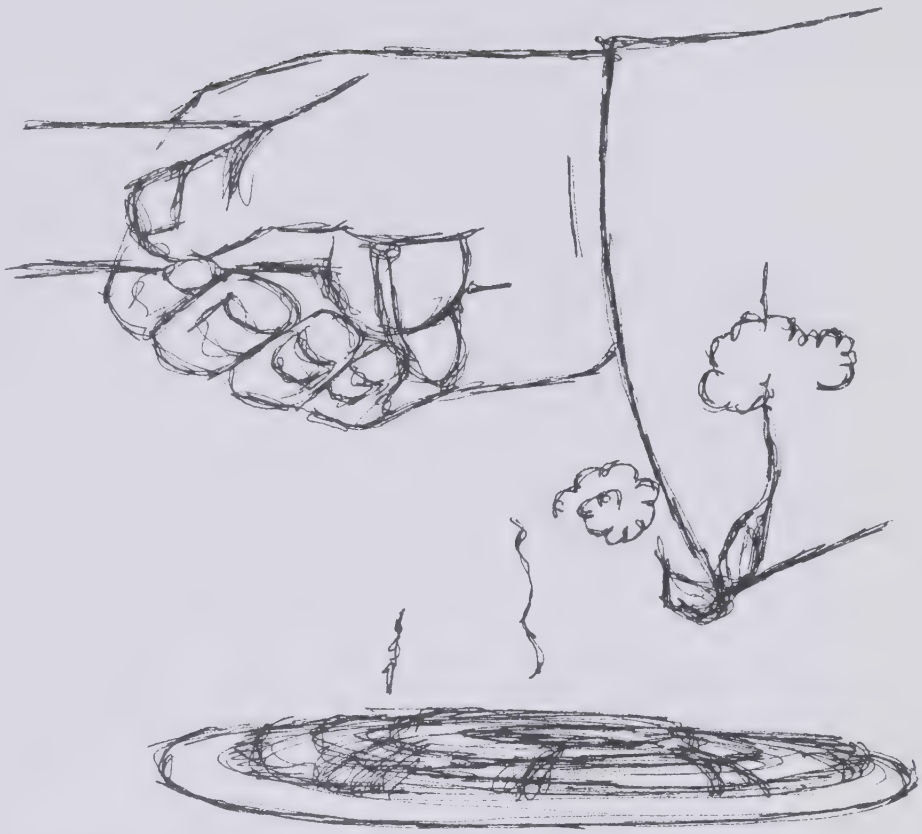
- Keep a fire extinguisher in the kitchen. Dry chemical or carbon dioxide is best for all-purpose household use. Look for one with the UL seal. Be sure family members know where the extinguisher is located and how to use it. Have it checked regularly to be sure it is in working condition.
- Do not use ungrounded electric appliances if your hands are wet or if you are perspiring or standing on a moist surface. Do not use them if you are in contact with plumbing, such as a sink or faucet, because plumbing is an effective ground system. It can draw electricity, which will flow from the appliance through you and to the plumbing. Be especially careful when operating appliances near the kitchen sink or other source of water—any place where you are likely to have a good ground. Remember—water and electricity do not mix.
- Disconnect appliances before cleaning them. Never put electrical parts in water unless the part is stamped "Immersible."
- Disconnect portable appliances when not in use.
- Never use a metal object to remove food from an electric



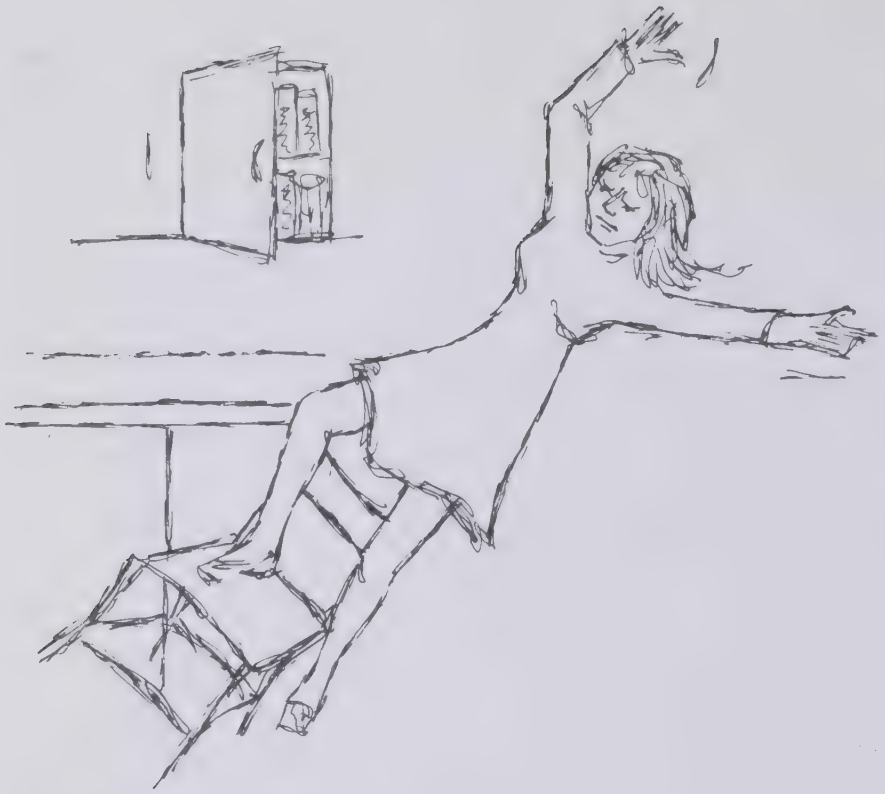
Avoid the electric octopus. Too many electric cords connected to one outlet create a fire hazard.

appliance while it is still connected. A person in New York used a fork to get a slice of toast out of an electric toaster and had to be hospitalized for severe shock and burns.

- Do not run electric cords near hot surface units or other hot objects.
- Keep electric appliances and cords in good working condition.
- Use the right type of extension cords for appliances. Review pages 246–249 on electric wiring.
- Never use an ordinary vacuum cleaner on wet surfaces or to pick up wet material. If you have carpeting in the kitchen, be sure it is dry before you vacuum it.
- Avoid the electric octopus—one outlet with numerous cords attached to it. Do not connect many cords to one outlet.
- If you are cooking with a portable appliance, be sure the cord is not positioned so someone can catch it accidentally and pull the appliance off the counter or table.
- Keep flammable materials such as towels, paper, pot holders, and plastics away from the range.
- All plastics, even polystyrene cups used for hot coffee, will burn if the ignition source is hot enough. A match or hot electric coil can ignite plastic. Some burn quickly and generate high temperatures. They produce large amounts of thick, black smoke and poisonous gases.
- Keep pan handles turned away from the edge of the range so the pan will not be knocked off.
- Do not wear loose-hanging garments or long sleeves when working at the range—they can catch fire easily.
- Do not try to get warm by leaning against a range—your clothing can catch fire.
- Use a pot holder instead of a towel to remove a pan from the range. The towel can touch the hot surface unit, ignite, and then ignite your clothing. Be sure pot holders are dry. Damp ones steam from the hot pans and can cause serious burns.
- When cooking, always lift pan lid toward you at an angle so pan edge farthest from you is open first. This allows steam to flow away from you. Otherwise, you can suffer a severe steam burn.
- If you have to light gas burners manually, strike the match *first* and then turn the burner on. Otherwise, you may have an explosion.



Long sleeves can catch fire easily when you reach for a pan on the range.



Use only a ladder or stepstool to reach high shelves. Chairs or boxes may look sturdy enough to stand on but they are not balanced properly to hold a person safely.

- If you smell gas, turn off all controls and open a window or door. Alert others and leave the house immediately. Call your gas company immediately.
- Always check electric ranges to be sure dials or push buttons are turned to "Off." The surface units do not show any signs when they are turned on, except on "High" when the units glow red.
- Never use flammable substances such as cleaning fluid or adhesives around gas ranges. Pilot lights can ignite the flammable vapors.
- When you fry foods, do not overheat the grease as it may catch fire. If grease ignites, do not throw cold water on it—it will spatter with explosive force. Turn off the surface unit. Then cover the pan with a lid or pour salt over it. Do not try to carry the pan of burning grease to the sink.
- Be careful when using fondue pots or chafing dishes. Never fill alcohol burners more than half full as the liquid expands and can spill flaming fuel on the table. Never refill the burner when it is lighted or hot. Keep a heat-proof tray under the appliance to catch drippings and protect the table.
- Use a metal container for waste paper and trash. If they accidentally ignite, the fire will not spread as quickly as in a plastic container.
- Clean range exhaust hoods and ducts frequently. Grease from cooking accumulates in these areas. It can catch fire easily.
- If a utensil slips through to the bottom of the dishwasher, wait until the dishwasher cools before removing it. If you touch the heating element while it is still hot, you may be badly burned.

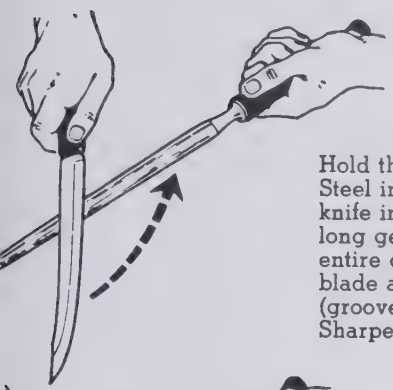
Falls

- When you wash the floor, block off the area until it is dry, so no one will slip on it.
- Use non-skid floor wax. Apply waxes in thin, even coats and buff well. Do not re-apply waxes too frequently without stripping them first. They become slippery when layers build up.
- If you must use scatter rugs in the kitchen, make sure they have a non-skid back.
- Use a ladder or stepstool to reach high shelves. Do not stand on a chair, box, or other makeshift arrangement that can tip over easily.
- Wipe up spills on the floor immediately.

Cuts

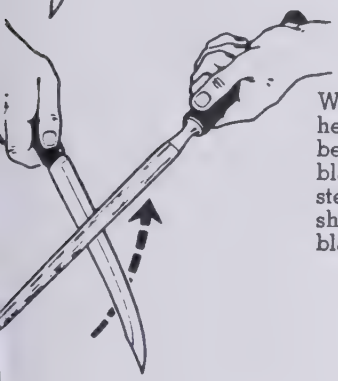
- Keep your fingers away from the blades when using a mixer or any other appliance with sharp blades. If the blades jam or you want to remove food or blades, first turn the appli-

sharpening-honing steel



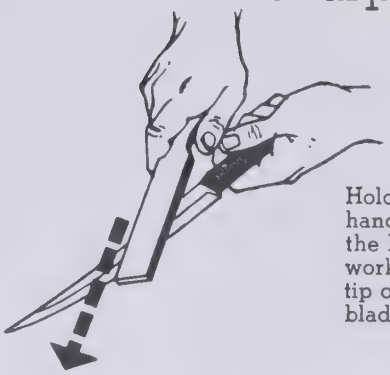
1.

Hold the Sharpening-Honing Steel in your left hand and the knife in your right hand. In a long gentle stroke, move the entire cutting edge of the blade across the serrated (grooved) surface of the Sharpening Steel.



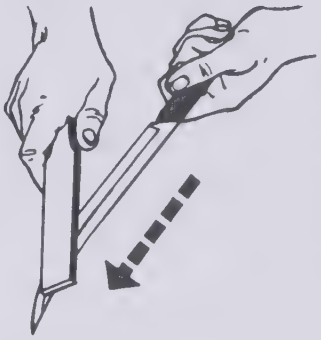
When one stroke, from the heel of the blade to its tip, has been completed, position the blade under the sharpening steel and repeat the motion to sharpen the other side of the blade. Do this several times.

sharpening stone



2.

Hold the Paddle in your right hand. Push the paddle across the blade from left to right, working down gradually to the tip of the knife. Note that the blade of the knife faces left.



Now turn the knife so the cutting edge faces right. Pull the stone across the blade from left to right. Again, work down the blade toward the tip as shown here. Only a few strokes will be necessary on each side to bring back a keen edge.

Ekco Housewares Co.

For safety's sake, keep knives sharp.

ance off. Unplug it so it does not turn on accidentally while your fingers are on the blades. Insert beater blades into a mixer before plugging it in.

- Keep knives sharp—they are safer than dull ones because they cut more easily. Since you do not have to apply much pressure, there is less danger of the knife slipping and cutting you.
- When cutting with a knife, cut *away* from your body, not toward it. Do not cut toward other people or point a knife or other sharp instrument toward others.
- If a knife starts to fall, do not try to catch it in midair. You can cut yourself severely.
- Use a knife for cutting only food. Do not use it for purposes for which it was never intended, such as opening a can or tightening a screw on a handle. Keep a screw driver, small hammer, and pliers on hand in the kitchen for miscellaneous repairs.
- Wash knives separately and dry them immediately.
- Store knives in racks or separate containers; do not keep them loose in drawers.
- To open cans, use a modern can opener, not one that leaves jagged edges. Cut off can tops completely and throw them in the trash. Do not leave them partly attached to the can and bend them up—you can cut yourself.
- Sweep up broken glass and china immediately. Never pick it up with bare fingers. Use a damp paper towel to pick up pieces safely.



Do not pick up broken glass with your bare hand. Use a paper towel or sweep it up.

• Never grope for broken glass in a sink filled with water. Wrap your hand in a towel and open the drain. When the water has drained, use a cloth or towel to pick up the glass.

• When loading silverware in the dishwasher, place sharp items with points down.

Poisoning

• If there are children, do not keep household chemicals and cleaners under a sink where youngsters can get them. Store them in a locked cabinet or on high shelves.

• Never put poisons in cupboards where food is kept. Someone can accidentally pick up the wrong container.

• When you use pesticides, cover all food and cooking and eating utensils before spraying.

• Close all poison containers securely.

Other Kitchen Hazards

• *Old Refrigerator.* If you buy a new refrigerator, dispose of the old one. If you keep it but do not use it, be sure to remove the doors. This will prevent children from locking themselves inside and suffocating.

• *Charcoal Grills.* Never use a charcoal grill or hibachi inside the home. Burning charcoal gives off large amounts of *carbon monoxide.* It is an odorless gas which is deadly and can kill in just a short time.

• *Cabinet Doors and Drawers.* Close cabinet doors and drawers immediately. If left partly opened, they can cause serious injury if anyone bumps into them.

• *Mixing Household Cleaners.* Read directions and warnings on containers of household cleaning products before using. Never mix two or more specialty compounds together, such as bleaches, ammonia, toilet bowl cleaners, rust removers, and oven cleaners. Chemicals in the mixtures may interact and release irritating or poisonous gases.

• *Aerosol Sprays.* Use aerosol cans containing non-food materials with care. Whether they contain hair spray, paint, or insecticide, the cans are pressurized and can be dangerous. Store in cool place. Do not use aerosol sprays near flames, ranges, or other flame or heat sources. Do not use around food. Use aerosols only in well-ventilated areas. Do not smoke when you use aerosols. Dispose of aerosol cans with other non-burnable trash. Do not puncture containers. Do not throw empty containers in incinerators or trash compactors —they still contain propellants which may cause explosions.

• *Exploding Bottles.* Over 100,000 people are injured every year by exploding bottles. Those containing carbonated drinks are more hazardous than others. The internal pressure of the carbonation may cause the bottle to burst or the cap to fly off. Do not buy bottles in wet or damaged soft drink cartons. Do not jostle or hit bottles against one another when carrying or stor-

ing. Never put bottles on door shelves—they are jarred each time the door opens and may explode. Store bottles in a cool place. Open bottles carefully, away from people, without shaking or knocking them against a hard surface. Before drinking, look for broken glass in the mouth of the bottle and inside.

Safety for the Elderly

Elderly people may like to help out in the kitchen. Since they have less energy and strength, they do best with small, lightweight, easy-to-handle utensils. They will be less likely to drop such utensils or to spill hot food and liquid.

Failing vision can be a problem when cooking. Range controls should have large, clear markings. Select several of the most commonly used temperatures. Paint large numbers at appropriate spots on the thermostat control. Be sure the range area is well lighted.

First Aid

- *Burns.* Cool the burn with cold water. Do not put grease, ointments, or oil on a burn—they can make it worse. Do not try to clean a burn or break blisters. Call a physician.
- *Electric Shock.* Pull the plug out if an appliance is involved or turn off the electric power, if possible. If you touch a person still in contact with electricity, you will get just as severe a shock. Use a non-conducting material such as a rope, wooden pole, or loop of dry cloth to pull the person from contact with electricity. Start rescue breathing. Call a physician or the fire or police department immediately.
- *Falls.* Stop severe bleeding, if any. Cover wounds with sterile dressing. Keep person comfortable and warm. If you think a bone is broken, do not move the person unless absolutely necessary, as in event of fire.
- *Poisoning.* Call physician. If the container is available, use the antidote recommended on the label. If none is given, call the emergency station of a hospital or your local poison control center. Tell them the kind of poison taken, and they will recommend an antidote.

Consumer Action

The *U.S. Consumer Product Safety Commission,* activated in 1974, is responsible for protecting people from unreasonable risks of injury caused by consumer products. The Commission has jurisdiction over more than 10,000 kinds of consumer products. If you have a complaint about the safety of a consumer product or if you have a product-related injury, report it to the Commission. Write Consumer Product Safety Commission, Washington, D.C. 20207. The product will be tested and evaluated by government laboratories. If it presents a hazard, the manufacturer will be informed and must take corrective measures.

Let's Explore and Report

- Survey your home for possible safety hazards. How can these situations be improved?
- Interview a food service manager regarding sanitation and safety practices in the kitchen. Make an appointment first.
- Make up a poster showing proper sanitation and safety practices to use in the home economics laboratory. To illustrate, make drawings or clip pictures from newspapers and magazines.
- Gather information regarding the safety of plastic materials used in the kitchen.

What Would YOU Do?

- Your best friend loves animals, so the family has a dog and a cat. A small floor area has been set aside in the kitchen for the pets' feeding dishes. Whenever you visit, you notice that the cat enjoys being in the kitchen, climbing up on the counter and the table. Your friend has mentioned several times that she doesn't understand why members of her family get the flu so frequently.



Chapter 16

Kitchen Ecology

To help you to . . .

- **Conserve natural resources when preparing food.**
- **Save time and energy in the kitchen.**
- **Organize and simplify meal preparation.**

What does ecology mean? It is the relationship between people and their environment. Your environment is anywhere you happen to be—at school, on a city street, or in your kitchen. You and your environment greatly influence each other. The environment affects the way you think, feel, and act. You, on the other hand, through your actions, can help to make your environment more pleasant and positive. One of the best ways to do this is by practicing conservation.

You are probably wondering what ecology and conservation have to do with your kitchen. When you work in the kitchen, you are responsible for the way you use several major natural resources—fuel, water, and food. Conserving these resources does not mean merely saving them—it means managing them wisely. In addition, you also have the responsibility for conserving personal resources—your time and energy.

veryone has the responsibility of onserving Earth's natural resources.

HOW TO CONSERVE NATURAL RESOURCES

Look for these terms
brownout
food waste
recycle

Severe shortages of fuel, water, and food have been felt in many parts of the world, including the United States. Experts agree that wasteful use of natural resources must be stopped before the supplies dwindle even more. As you plan your day's meals and shop for and prepare food, you can help conserve natural resources in many ways.

You Can Help Conserve Fuel

The most common fuels used in the kitchen are gas and electricity. Of all the fuel used in a home, more than 80 percent goes for five activities:

- Heating.
- Air conditioning.
- Water heating.
- Refrigeration.
- Cooking.

Here are guidelines to help you do your part in conserving the world's fuel supply:

- Turn off light bulbs and appliances when not in use.
- Keep doors and windows tightly closed to keep heated or cooled air from escaping.
- Help prevent brownouts. A *brownout* occurs when the demand for electricity is greater than the supply. Lights dim and motors cannot operate efficiently. Electricity cannot be stored in large quantities but must be generated by the power plant as it is needed. Generally, the high-use period for fuel is Monday through Friday, from 8 A.M. to 8 P.M. This is when business and industry use the most fuel. Schedule home activities

which use large amounts of fuel for the slack periods, when community demands for power are low. For instance, use the dishwasher late in the evening, after 8 P.M. If you plan to cook large quantities of food for the freezer, do it on a weekend.

- Read the owner's manuals for proper use and care of your appliances. If an appliance is in poor condition or not used properly, it can often consume more fuel than it would normally. Operate appliances at the proper temperatures. Keep them clean on the inside and outside. Accumulations of dirt and grease can cut appliance efficiency. For instance, food spatters on oven walls absorb heat that would otherwise be used for cooking food.
- Freezers and refrigerators operate most efficiently when at least three-fourths full. However, do not overload them—it keeps air from circulating properly and cuts down on efficiency.
- Oven cooking uses less heat than surface cooking. Why? The oven is a closed compartment. Once it reaches the temperature you have selected, the gas or electricity comes on only when needed to maintain that temperature. When you cook on top of the range, the fuel flows constantly. To save fuel, cook foods in the oven whenever possible. Stews, for example, can be oven baked rather than cooked on top of the range.
- To get maximum use of the fuel, cook an entire meal in either the oven or broiler. For instance, if you are roasting chicken, bake a vegetable in the oven at the same time instead of cooking it on top of the range.
- If possible, thaw frozen foods before cooking them, unless otherwise directed on the package. Frozen foods generally use more fuel than thawed foods.
- If you have both a small and large oven, use the small one whenever possible.
- Preheat the oven only for baking. Casseroles, meats, and similar foods do not require preheating.
- Do not open and close the oven door frequently to see how the food is cooking. Heat escapes—the oven temperature drops at least 14 °C [25° F.] every time you open the oven door.
- Cook in batches. Depending on the size of the oven, bake six pies, cakes, or loaves of bread. Double recipes and make two or three meat loaves. Freeze those you cannot use immediately.
- Use ovenproof glass, glass ceramic, or earthenware dishes for oven cooking. You can lower the temperature by 14 °C [25° F.] because these materials absorb and hold more heat than metal utensils do.
- Use a pressure cooker for less tender cuts of meat. It uses less fuel than a standard pan.
- If you have small cooking appliances, use them to prepare small amounts of food. For instance, toasting bread in an oven takes three times as much fuel as using a toaster.
- Turn a gas range off immediately after use. Turn the surface units of an electric range off a few minutes before the food is done. Enough heat remains in the electric coil to complete the cooking.
- Use pots and pans to fit the size of the surface units. If the utensils are too small, heat escapes around them.
- When water comes to boiling, turn the control to simmer. Slightly boiling water is the same temperature as rapidly boiling water.

WARNING—A HEALTH HAZARD

To conserve fuel, some conservationists recommend cooling cooked food to room temperature before refrigerating it. This is a dangerous practice—as the food cools slowly, bacteria multiply rapidly. Cooked food should be refrigerated immediately after serving. It should not be allowed to stand at room temperature.

You Can Help Conserve Water

Water pollution and wasteful use have endangered the water



General Mills, Inc.

Beef stew, topped with instant mashed potatoes, helps save fuel when prepared in the oven instead of on top of the range.

Fuel-savers . . .

A meal-in-one, such as chicken biscuit pot pie, helps save fuel. It includes chicken, sauce, vegetables, and biscuits. Just add a salad and beverage to complete the meal.

National Broiler Council





Not many communities have an abundant supply of pure, clean water.

supply in many communities. When working in the kitchen, you can take these steps to help conserve your community's water supply:

- Repair drippy faucets. One drop a second can waste 2700 ℓ [700 gallons] of water a year. If hot water is dripping, you not only waste water but fuel as well.
- Run the dishwasher only with full loads.

Water must be used again and again. When it leaves your home, it goes to a sewage treatment plant and eventually is returned to the water supply. Make every effort to see that it leaves your home as clean as possible. This will lessen the load on the sewage treatment plant.

- Use laundry, dishwashing, and cleaning compounds only as directed. Do not use more than recommended.
- Do not use the food waste disposer more than absolutely necessary. It adds a heavy organic load on the sewage treatment plant.
- Do not dump paint, solvents, pesticides, or other chemicals into the sewage system. Ask local authorities for other ways of disposing of them.

You Can Help Conserve Food

Nutrients in food can be wasted through careless handling and preparation. These guidelines can help you to conserve food nutrients:

- Buy only food that is in good condition.
- Store food at correct temperatures. See Chapter 12.
- Trim as little as possible from fresh fruits and vegetables.
- Cook most vegetables in as little water as possible. Cook only long enough to make them tender but not soft.
- Use pot liquor or vegetable cooking water for soups, stews, gravies, and sauces, or as a beverage.
- Do not overcook any food—it can be unappetizing and may end up as food waste.

Careless handling not only wastes nutrients, but it can also waste the food itself. *Food waste* is any food that was once edible, except for chunks of meat fat. It does not include bones, eggshells, banana or citrus peels, or any other parts not usually eaten.

People in the United States, accustomed to an abundant food supply, waste vast amounts of food. Experts estimate that at least 10 percent of the edible food in the United States is thrown away, either as garbage or poured down the drain. In a recent study made in a large southwestern city, 9 percent of the edible food ended up as waste in garbage cans. This did not include the food ground up in food waste disposers, or beverages poured down sink drains.

With the world demand for food increasing, food waste must be controlled. The guidelines listed here can help you cut down on food waste in your home. They can help you save money, too.

- Use portion control (see page 114) when preparing and serving food. As discussed ear-

lier, most people in the United States eat far more food than they need. Portion control means you will have little if any food left to be thrown out.

- At the end of the meal, check to see if any food is left on plates. If it is, find out why. Perhaps the cooking method can be changed to make the food more enjoyable to eat. Perhaps the food was overcooked, giving it a poor appearance and flavor.
- If food is left over on a plate, feed it to your dog, if you have one. Otherwise, give it to neighbors who have a dog or cat.
- Keep track of the food in the refrigerator and freezer and use it before it loses quality.
- Do not buy food on sale if you do not want it or need it or may never use it.
- Make use of dried-out bread and cheese. Grate bread into bread crumbs and store in a covered container in the refrigerator. Whole wheat bread crumbs add nutrients as well as a delicious nut-like flavor to foods. Grate dried-out cheese, store in an air-tight container, and refrigerate. Use whenever you need grated cheese.

WHAT TO DO WITH LEFTOVERS?

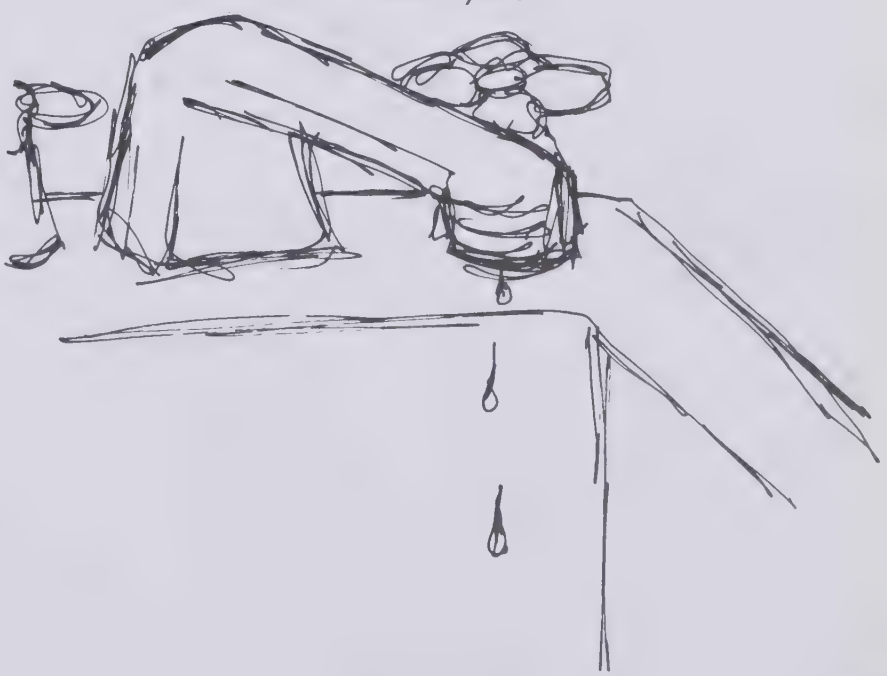
No matter how carefully you plan, you may have some leftover food you had not counted on. Put in a covered container and refrigerate. Use within a day or two. Here are some ideas for using leftovers:

- *Hard-cooked eggs:* Snacks, casseroles, salads, sandwiches.
- *Cooked meat, poultry, fish:* Sandwiches, salads, casseroles, hash, creamed foods.
- *Meat or poultry drippings and broth:* Gravies, sauces, soups, stews.
- *Cooked potatoes:* Salads, soups, stews, chowders, toppings for meat pies, fried, or creamed.
- *Pot liquor (vegetable cooking liquid):* Gravies, sauces, soups, stews, beverages.
- *Cooked vegetables:* Salads, soups, stews, meat pies, casseroles, omelets, soufflés, scalloped, or in cheese sauce.
- *Cooked pasta:* Baked with cheese, casseroles, salads, meat or cheese loaf.
- *Fruit cooking liquid or fruit syrups:* Fruit cups, sauces, drinks, gelatin mixtures, puddings, snacks.

Recycling Materials

Some materials, such as aluminum and paper, can be recycled. To *recycle* means to reprocess used products so they can be used again. Such products are collected and sent to processing plants where the raw materials are extracted and reused in manufacturing new products. Perhaps you have used stationery, books, or other paper products bearing the

One drop a second from a drippy faucet can waste 2700 ℓ [700 gallons] of water a year.



label, "Made from recycled paper." Using a raw material over and over instead of destroying it is an effective way to help conserve natural resources.

Many communities have collection centers for materials to be recycled. If your community participates in any of these programs, you can help by saving the products and taking them to the center. For instance, if there is a collection center for aluminum cans, do not throw away aluminum cans once contents have been removed. Instead, wash them thoroughly to prevent bacteria and odors. Store apart from other trash and take to the collection center regularly.

You can also reuse products in your kitchen:

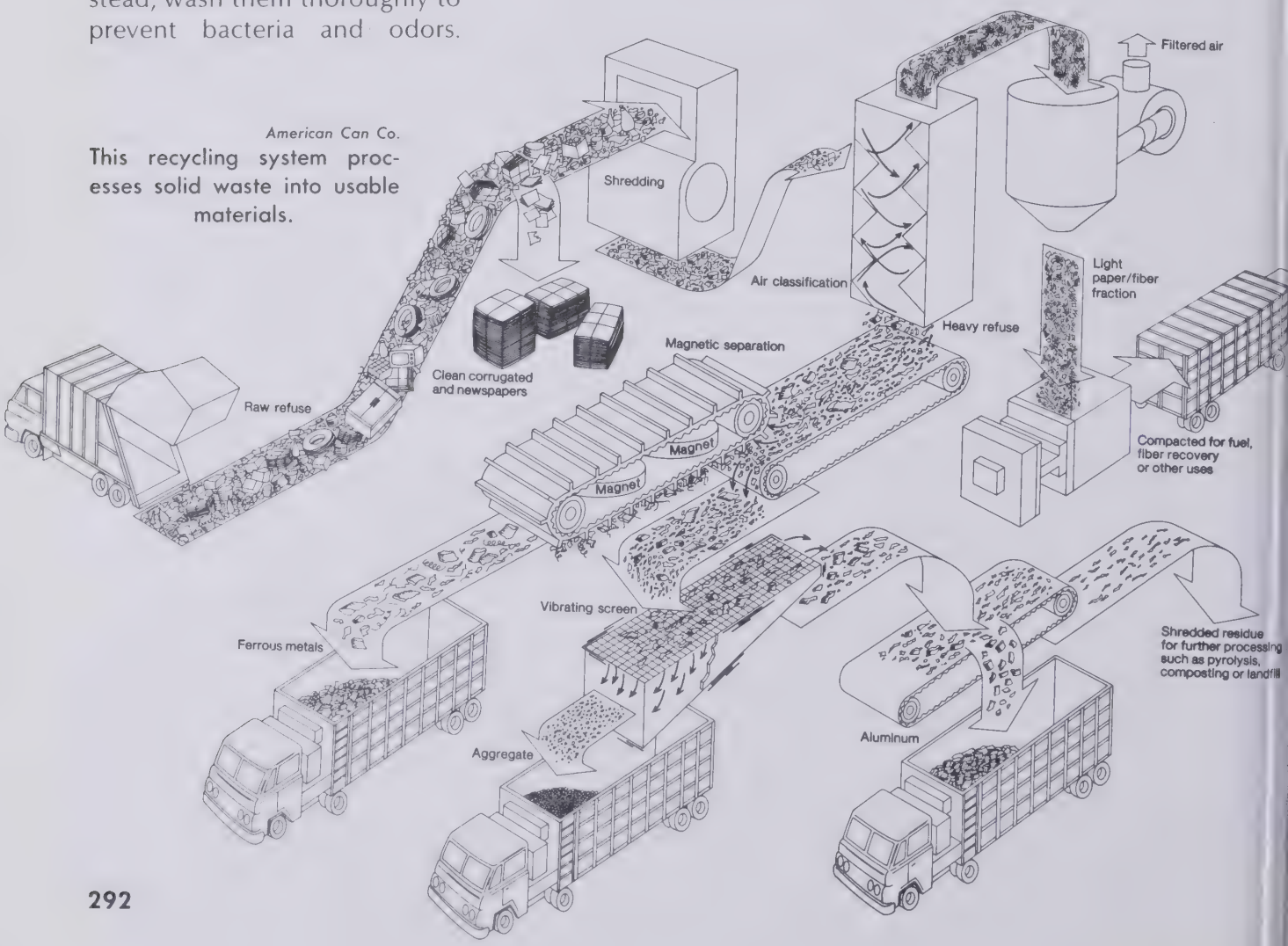
- Save glass containers with lids, wash them well, and use for storing food.
- Buy beverages only in returnable bottles. When you take these bottles back to the store, they are returned to the beverage manufacturer who cleans and reuses them.
- Reuse aluminum foil and foil pans. Wash and dry first.
- Reuse plastic containers from foods such as dairy products.
- Save and reuse paper and plastic bags.

Let's Explore and Report

- Make up a visual display showing ideas on how to save fuel in the home.
- Look through books, newspapers, and magazines for

American Can Co.

This recycling system processes solid waste into usable materials.



ideas for reusing containers in which food is packaged. Select two and demonstrate in class.

- Have a brainstorming session on ways people in the community can help conserve fuel, water, and food.

HOW TO CONSERVE PERSONAL RESOURCES

Look for these terms
pre-preparation
recipe
smoking point
yield

Time and energy are among your most precious personal resources. As part of learning to manage these resources in the kitchen, you will need to understand the basic procedures and tools used in food preparation. You will also need to know how to get the work done by using the least time and energy.

How To Select a Recipe

A *recipe* is one of the most important tools in food preparation. It gives you instructions for preparing a specific food. See sample on this page. It should give you the following information:

- A list of ingredients and amounts of each. Ingredients should be listed in the order in which they are used. Amounts may be given in volume measures, such as milliliters [cups or spoons]. They may also be given as a certain number of pieces, such as 4 eggs. Recipes in this book give amounts in both the metric and customary systems (see Appendix A).

Twinkle Cookies

Metric		Ingredients	Customary
Weight	**Volume**		
120 g	120 mℓ	Butter or margarine	½ cup
60 g	60 mℓ	Brown sugar	¼ cup
1	1	Egg, separated	1
—	1 mℓ	Lemon extract	¼ teaspoon
120 g	240 mℓ	Sifted all-purpose flour	1 cup
120 g	240 mℓ	Chopped walnuts	1 cup
		Jelly or candied cherry halves	

Temperature: 190 °C [375° F.]
Yield: 2 dozen
Baking pan: Cookie sheet
Preheat oven.
Mix together the butter or margarine, brown sugar, egg yolk, and lemon extract. Stir in the flour.
Roll dough into 2.5 cm [1-inch] balls.
Beat egg white until foamy.
Dip the balls in the egg white. Then roll in the chopped nuts.
Place about 5 cm [2 inches] apart on an ungreased cookie sheet.
Bake in preheated oven for 5 minutes.
Remove from the oven. Quickly press the tip of the handle of a wooden spoon into the top of each cookie to make an indentation. Be careful not to poke through to the bottom of the cookie.
Return to the oven. Continue baking for about 8 minutes longer. When browned, remove from oven.
Remove from cookie sheet.
Cool. In the center of each cookie place a little jelly or a candied cherry half.

- Specific instructions for combining ingredients. The instructions should be given step by step and clearly stated so you understand what you are to do. They should be given in the logical order in which the recipe is put together.
- Kind of pan and size.
- Cooking temperature and time.
- Number of servings or pieces, sometimes stated as *yield.*

You can find recipes in cookbooks, magazines, newspapers, and on food containers. Before you decide to try a recipe, study it carefully. Look for one that will meet your needs as far as budget and cooking skills are concerned. For instance, if the recipe calls for one teaspoon of chutney, a type of relish, you will have to buy a whole jar but may never use up the remainder. You can save money by selecting recipes using common ingredients.

What should you do if you want to prepare food for one or two people but the recipe gives six or eight servings? You can use several methods, depending on the type of recipe.

- *Mixtures such as casseroles or meat loaf.* Divide the recipe to get the yield you want. For instance, if the recipe gives six servings and you want to cook for two, use one-third of the quantity specified for each ingredient. Cook the food in a small pan, such as individual baking dishes or muffin tins. Because the quantity is smaller, the food will cook in a shorter time, so be sure not to overcook it.
- *Roasts, such as poultry.* Instead of buying whole poultry, buy only enough parts for the meal. Roast as you would whole poultry, but for a shorter time. If you wish to have stuffing, prepare only the amount you need and bake in a small pan along with the poultry. To prepare a pot roast, use the same recipe but cut the roast into small pieces. Freeze those you do not use. This will enable you to cut the recipe down to the size you need.
- *Baked products such as cookies and cakes.* Generally, baked products depend on exact amounts of the ingredients in specific relation to each other. If you change the proportions, you may get a failure. Unless the recipe can be cut in half or into thirds exactly, it is best not to try to make a smaller amount. If, for instance, you can divide a cake recipe in half, make half a layer cake. Bake it as one layer and cut in half when cool. Put the two halves together and frost.

Cooking Methods

Most foods can be prepared in a number of different ways. They can be cooked in moist heat: boiled, simmered, poached, braised, stewed, steamed, or prepared in a pressure cooker or heavy-duty plastic bag. Foods can be cooked in dry heat: baked, roasted, or broiled. They can also be cooked in fat: panfried, pan broiled, deep-fat fried, or sautéed. These methods are described on pages 295–298.

High-Altitude Cooking

High altitudes can affect cooking results. As the altitude increases, water boils at a lower temperature. Also, the air is thinner because the pressure is lower.

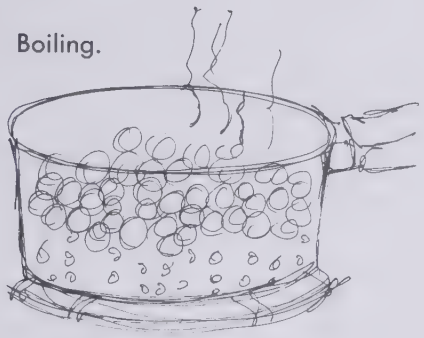
Most of the populated areas in the United States are located at altitudes below 915 m [3,000 feet]. Thus recipes are generally developed for use at this altitude. For use at higher altitudes, adjustments are often needed.

For every 153 m [500-foot] increase in altitude, the boiling point of water drops .5 °C [1° F.]. At 1524 m [5,000 feet] above sea level, water boils at 98 °C [208° F.]. Thus foods cooked in liquid, such as vegetables or eggs, take longer to cook. Even though they are boiling, they are not cooking at as high a temperature as they would be at a lower altitude.

Because the air is thinner at higher altitudes, leavened products such as cakes and breads rise faster. Usually, leavening or sugar in cake recipes is decreased slightly while liquids are increased slightly. Oven temperatures for baked products are often increased.

COOKING METHODS

Moist Heat



Boiling.

Boil

Bring liquid to boiling temperature, 100 °C [212° F.]. Bubbles come up continuously and break the surface of liquid. Rate of boiling does not affect the temperature. Rapid boiling does not cook food any faster than a slow, rolling boil. At rapid boil, liquid usually evaporates quickly.

Use for:

- Bringing vegetable water to proper temperature before vegetables are added.
- Cooking down liquid, such as soups and gravies, to evaporate the liquid and give a more concentrated flavor.
- Cooking jams and jellies.

Simmer

Bring water to a boil, then lower heat. Bubbles rise slowly but do not break the surface. Generally, temperature is just below boiling, 100 °C [212° F.]

Use for:

- Cooking vegetables until just done.
- Cooking fruit, stews for long periods of time.
- Most long-term cooking of liquids, such as soup.

Poach

Bring liquid to simmering. Put food in carefully. Cook at simmering until done. Food cooks slowly and retains its shape. Rapid boiling would break the food up.

Use for:

- Fish.
- Eggs.
- Fruit.

Braise

Brown food on all sides in a small amount of fat. Add small amount of liquid to cover bottom of pan. Add seasonings. Put cover on pan. Simmer on top of range or bake in oven until done.

Use for:

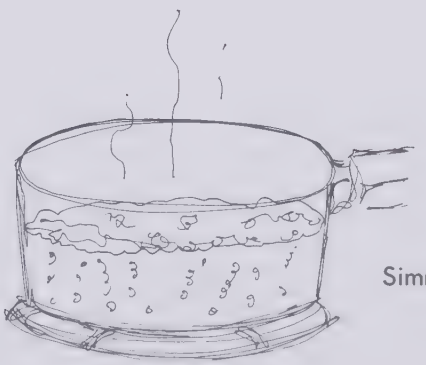
- Less tender cuts of meat.
- Poultry.
- Some vegetables, such as whole carrots.

Stew

Cover food with liquid. Add seasonings, if any. Cover and simmer until done.

Use for:

- Less tender cuts of meat.
- Poultry.
- Fish.
- Dried fruits.



Simmering.

Cooking Methods: Moist Heat (Continued)

Steaming.



Steam

Use only enough water in pot to generate steam. Put food in a steamer pan or other container with holes so steam can get to the food and cook it. Food must be held out of the water. Cover pan to contain steam.

Use for:

- Breads and cakes, such as Boston brown bread and fruit cake.
- Puddings.
- Vegetables.

Pressure Cook

Fill pan no more than two-thirds full. Follow manufacturer's instructions for using pressure cooker. Do not remove lid until pressure drops to normal.

Use for:

- Less tender cuts of meat.
- Poultry.
- Vegetables that take a long time to cook, such as potatoes and carrots.

Cook in Plastic Bag

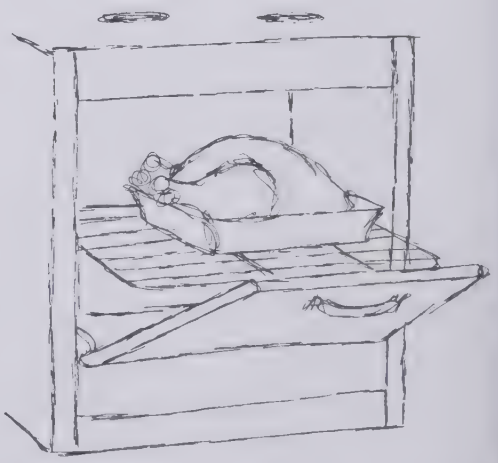
Use only special cook-in-the-oven plastic bags. Follow directions on the package carefully. Sprinkle at least 15 mℓ [1 tablespoon] of flour in the empty bag. This protects the bag against bursting and releasing hot fats and juices. Place bag in pan large enough to hold the food and juices. Place food in bag and seal with special twist tie which accompanies it. Puncture bag by making small slits with a paring knife. This allows air and water vapors to escape from the bag. Otherwise, the bag may explode as steam accumulates and expands.

Use for:

- Poultry, especially turkey.
- Less tender cuts of meat.

Dry Heat

Baking.



Bake or Roast

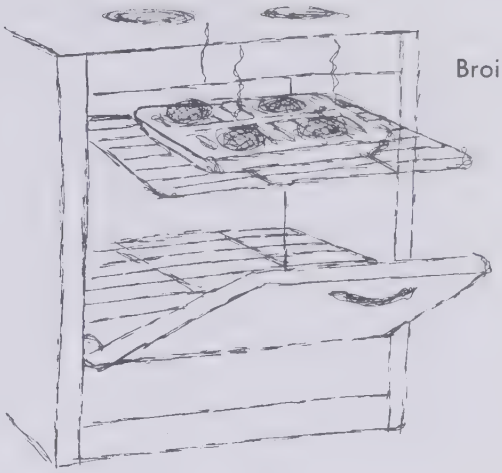
Put food in an uncovered pan. Do not add liquid to meat or poultry. Bake or roast in the oven at specified temperature. Roasting refers to meat. Baking usually refers to cakes, breads, cookies, and pastries. However, when ham is roasted in the oven it is called "baked" ham.

Use for:

- Cakes, breads, cookies, pastries.
- Tender cuts of meat.

Broil or Grill

Place food on a grill or broiler pan. Cook under direct heat, either gas or electric, in a broiler. Thickness of food determines how close pan is placed to heat. The thicker the food, the farther from the heat. Also cook over hot coals or gas flame on an outdoor grill. In broiling, fat is allowed to drain away from meat. The rack holds the meat far enough above the pan bottom so that it does not rest in drippings. Since fat and excess calories drip away, broiling or grilling is a popular cooking method with dieters.



Broiling.

Frying

Fats and oils have a *smoking point*—the temperature at which they begin to break down or decompose and smoke. Once they begin to smoke, they develop an off-flavor and should not be used for cooking. For this reason, watch temperatures closely when cooking with fats or oils.

Panfry

Melt a small amount of fat in a skillet. Add food and cook slowly until food is done. If the food is thick, such as chops, a cover may be used. Turn food over halfway during cooking period.

Use for:

- Tender cuts of meat.
- Some poultry.
- Fish.
- Eggs.

Panbroil

Melt a very small amount of fat in a skillet. Add food. As fat accumulates from the food, pour it off so food does not soak in fat. Do not use a cover.

Use for:

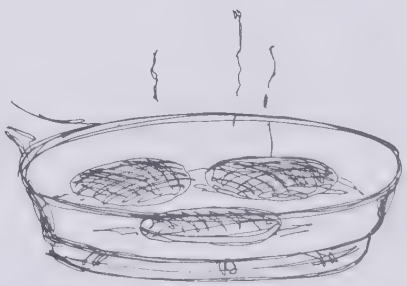
- Thin pieces of meat, such as bacon, minute steaks.
- Steaks cooked rare.
- Tender cuts of meat.

Sauté

Melt a small amount of fat in a skillet. Add food and cook until done.

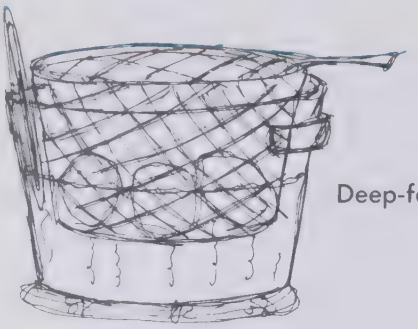
Use for:

- Foods that cook quickly—onions, mushrooms.
- Precooking foods that are to be used in a recipe, such as green pepper strips or chopped celery.



Frying.

Cooking Methods: Frying (Continued)



Deep-fat frying.

Deep-Fat Fry (sometimes called french fry)

Fill a deep kettle not more than half full of shortening or oil for frying. Use a deep-fat frying thermometer. Bring fat to temperature specified in recipe. If temperature is too low, food will soak up fat. If it is too high, food will burn on the outside but may still be raw on the inside.

Be sure food is dry and at room temperature. If you add cold or wet food, the fat will bubble. It may overflow the pan, causing a grease fire.

For small pieces of food, such as potato slices or onion rings, use a wire frying basket. Food can be lowered into fat and removed more easily.

The time required for frying depends on the temperature of the fat, the size and quantity of food, and whether the food is raw or already cooked.

Cook small quantities of food at a time. When the food is cooked, remove from fat. Drain thoroughly on paper toweling before serving to remove excess fat. Allow fat to re-heat to correct temperature before adding another batch of food.

When done, allow fat to cool. Strain it through a cloth into a container, cover and refrigerate. Use again for deep-fat frying. Keep in mind that fat absorbs odors. If you fry a strong-flavored food such as fish or onions, the fat will absorb the odor. You can save it for frying strong-flavored foods in the future or discard it. Do not use it for frying mild-flavored foods such as potatoes since the strong flavor will transfer to the mild food.

At high altitudes, some experimenting is usually needed with baked products to get the right amount of decrease or increase.

If you move into an area located at altitudes above 915 m [3,000 feet], you can get assistance in adjusting recipes from several sources. Call the local utility, county extension service, or the local newspaper.

Organize Your Work

Meal preparation in the average home may take from a few minutes to make a sandwich and heat up a can of soup to several hours to prepare an elaborate meal. People in food service, however, spend their entire working day preparing food. As a result, the industry has developed methods to simplify food preparation jobs. These methods help employees to work more efficiently, using less time and energy to complete their assignments. While many of these methods apply only to preparing food in large quantities, some of the ideas can help you to work more efficiently in your kitchen.

READ RECIPE CAREFULLY BEFOREHAND

Read the recipe carefully when you plan the meal and before you shop so you will know what ingredients you must buy. The recipe may also call for food to be prepared ahead of time, such as soaking dried beans overnight. The only way you will know you must do this is to read the recipe beforehand. Also, recipes sometimes have other ingredients listed in the instructions that do not appear in the list of ingredients. If you do not read the recipe in

advance, you will not realize you must buy that ingredient.

When you read a recipe, make note of the following:

- Food preparation to be done ahead of time, known as *pre-preparation*. This can involve chopping or grinding foods, or marinating meat for a specified length of time.
- Food and equipment needed.
- Length of time it may take you to assemble and prepare the recipe, but do not include cooking time. This will help you to draw up a timetable for the meal so you will know when to start preparing food. The timetable is discussed later in this chapter.
- Length of time food must cook and oven temperature, if oven is used. Include preheat time, if any.



Culinary Institute of America

The food service industry has developed methods which help employees work more efficiently. Thus employees use less time and energy in completing their assignments.

ASSEMBLE EQUIPMENT

If you gather all the equipment you need before you begin to prepare the food, your work will flow more smoothly. You will not have to stop every so often to look for another piece of equipment.

You may find it helpful to use a tray or cart for gathering small equipment. Place all equipment on the counter or table on which you will be working.

Be sure to select the correct pan size as specified in the recipe. This is especially important if you are baking. Cakes and mixtures such as casseroles are designed to fit a certain size pan. If you select a pan that is too large, the casserole mixture may dry out before it is cooked. If the pan is too small, the mixture may overflow as it bakes.

ASSEMBLE INGREDIENTS

Gather all the ingredients before you begin to work. Use a tray or cart and place the ingredients on the counter or table on which you will work. Some of the ingredients may need pre-preparation—something may have to be done to them before you can use them in a recipe.

PRE-PREPARATION

Pre-preparation is one of the most important steps in working efficiently. It is a vital part of the activities in food service. It includes many processes, from cleaning to pre-cooking. Do any pre-preparation needed before you begin to put the recipe together. This way, the food will be ready to use as you need it.

- Wash fruits and vegetables. Peel, if necessary, and cut or prepare as directed.
- Cut or chop other foods such as bread, nuts, or meat.
- Cook foods such as pasta.
- Brown meat.
- Measure as many ingredients as you can. Pour measured dry ingredients onto pieces of waxed paper.
- Grease baking pans.

SIMPLIFY YOUR WORK

As you work, look for shortcuts for each job. Be certain,

Follow these steps when preparing a recipe . . .



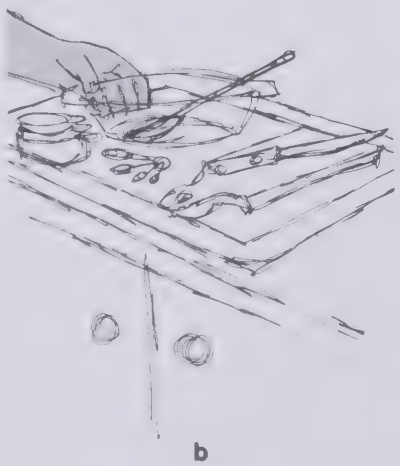
a
Read the recipe carefully beforehand.



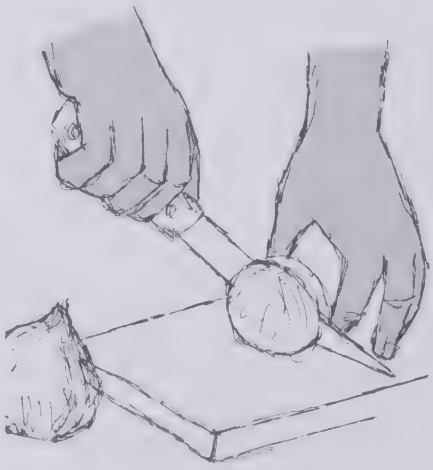
c
Assemble ingredients.



e
Clean up as you work.



b
Assemble equipment.



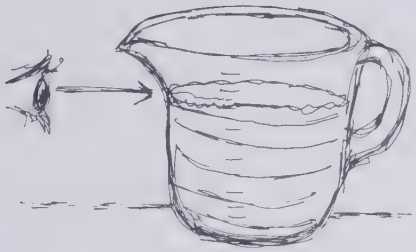
d
Do pre-preparation.

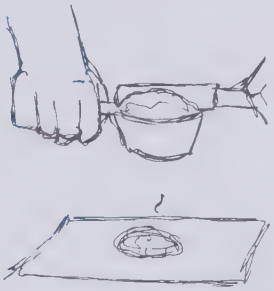
however, that the shortcuts do not violate the rules of sanitation and safety discussed in Chapter 15. Also learn to use your kitchen tools and appliances correctly—they can make your job easier.

Here are a few hints for simplifying your work:

- Measure all dry ingredients first, such as flour and sugar. Then measure shortening. This way you will not have to wash the measuring cup until you are through measuring. If you measure the shortening first,

MEASURING REMINDERS





To Measure Liquids:

Use a glass or transparent plastic measuring cup with a pouring spout and about a 0.6 cm [¼-inch] headspace at the top. The headspace prevents spillovers. To measure, set the cup on a level surface and pour in the liquid. Look at the measure at eye level (you may have to stoop down). Never hold the cup in your hand to measure—you may tilt it and get an inaccurate measure.

To Measure Dry Ingredients:

Use the right size Mary Ann measuring cup or measuring spoon. Spoon ingredient lightly into cup to avoid packing it down. Use a spatula or the straight edge of a knife to level off the top of the cup or spoon.

- *Flour.* If the recipe calls for sifted flour, sift it before measuring. Spoon flour gently into the cup. Do not pack it down or shake the cup—you will have more flour than called for. Whole grain flours such as whole wheat and rye should not be sifted before measuring.
- *Sugar.* Spoon *granulated sugar* into the cup and level off. Sift *powdered sugar* before measuring. Pack *brown sugar* into cup solidly with a spoon. When turned out, brown sugar should hold the shape of the cup.

you will have to wash and dry the cup before you can measure dry ingredients.

- When measuring syrups such as molasses or honey, grease the cup first so the syrup will pour out easily.
- Use portable appliances such as a mixer or blender to save time and energy.
- Scrape bowls, pans, beaters, and spoons with a rubber scraper—you save food and cut down on cleaning.
- Always cut on a cutting board. Never cut on a table or counter because you can damage those surfaces. However, the board is made especially for cutting.

CLEAN UP AS YOU WORK

Perhaps this has happened to you as you prepared food. You used every pan, spoon, bowl, and pot in the kitchen and you still were not through preparing the meal. What is the best way to prevent this from happening? Clean up as you work.

If you have a double-bowl sink, keep one bowl filled with hot sudsy water. If you have a one-bowl sink, use a dishpan. As you use equipment, rinse it and put it in the hot suds. Whenever you have a break in your food preparation—you may be waiting for onions to sauté or for yeast bread to rise—wash the equipment. Rinse and dry thoroughly. This way, you will always have clean equipment to continue your work. As the suds become dirty or cold, empty the water and replenish with clean, hot suds. If you get into the habit of clean-



ing up as you work, you will have little danger of running out of equipment.

When washing by hand, whether dishes or equipment, use hot detergent suds. Scrape all food off into a garbage pail or the disposer. Wash dishes and equipment carefully. Rinse with hot water. An easy way to do this is to place washed dishes in a dish rack in the sink. Pour hot water over the dishes. You can either let dishes air dry or dry them with a towel.

If food has baked onto pots and pans, soak them in hot suds. Put cooking and baking pans to soak as you empty them. You may not be able to wash them before you eat, but they can be cleaned more easily afterward. If you do not soak them, baked-on food hardens and dries and is difficult to remove.

How To Time a Meal

How do you prepare a meal so all of the food is done at exactly the same time? Many people are baffled by this problem, but the answer lies in one word—planning.

To have a meal ready at a certain time, you must determine:

- What time the food is to be served.
- What kind of food is to be served.
- How long the food must cook.
- How long it will take to prepare each recipe. Do not include cooking time in your estimate.

Make up a timetable, such as the sample shown on page 304. On your timetable, show the cooking time for the food and the time needed for preparation. Deduct the total time needed from the time you want to serve the meal. This will give you an idea as to when to begin preparing the food.

From the timetable make up a schedule, beginning with the food to be started first. See page 305. Check off each food as you prepare it so you do not forget anything.

Even the most experienced cooks use this method. Food service managers prepare daily time schedules, so all cooks and helpers know exactly when to begin preparing their assigned foods. By making up a schedule you, too, can get all the food ready on time.

urkee Famous Foods

reparing a meal so all the foods re done at the same time takes planning.

Let's Explore and Report

- Plan a meal with foods that can all be cooked in either the broiler or the oven.
- Look through newspapers, magazines, and cookbooks for recipes. Bring one that is easy to understand and one that is difficult to follow. Compare with those your classmates bring. How would you rate them for clearness of instruction? How could they be improved?
- Interview someone who works in a food service kitchen. Get as many ideas as you can for simplifying food preparation. Prepare a poster of some of these ideas.
- Select one specific method from each food preparation category—cooking in moist heat, in dry heat, and in fat. Demonstrate how to prepare food by these methods and include suggestions for conserving natural resources such as fuel, food, and other materials.
- Prepare a five-minute talk on the importance of measuring ingredients in a recipe accurately.

What Would YOU Do?

- You are preparing a dinner for yourself and five friends. You want to conserve fuel so you select three foods which can bake at the same temperature, but for different lengths of time. Baked potatoes will take $1\frac{1}{2}$ hours, meat loaf will take 1 hour, and green bean casserole $\frac{1}{2}$ hour. You decide you can remember something that simple, so you don't make out a timetable. As you open the oven door to put in the green bean casserole, you discover that you never put the potatoes in to bake. Three of the friends are meat-and-potato eaters.

MENU FOR DINNER

Oven temperature: 191° C [375° F.]
Baking times given below.

Baked Chicken Pieces
(Bake 60 minutes)

Baked Potato
(Bake 70 minutes)

Green Bean Casserole
(Bake 20 minutes)

Citrus Salad

Rolls
(Brown 10 minutes)

Butter or margarine

Coffee, tea, milk
(Hot water for instant coffee, tea bags)

Fudge Sundae

TIMETABLE FOR DINNER

Meal to be served at 6 P.M.		Preparation Time	Cooking Time	Total Time	Begin Preparation
Food	**Preparation Needed**				
Chicken	Remove wrapping; clean. Coat with seasoned topping mix. Put on greased baking pan.	20 min.	60 min.	80 min.	4:40 P.M.
Potatoes	Scrub potatoes.	15 min.	70 min.	85 min.	4:25 P.M.
Green Beans	Place beans in casserole with other ingredients.	10 min.	20 min.	30 min.	5:30 P.M.
Citrus Salad	Section oranges, grapefruit. Wash lettuce; separate leaves. Assemble salad; refrigerate. Use bottled dressing.	30 min.	_____	30 min.	5:00 P.M.
Rolls	Open package and place on pan.	5 min.	10 min.	15 min.	5:45 P.M.
Coffee, tea	Heat water in teakettle.	_____	10 min.	10 min.	5:50 P.M.
Milk	Pour into glasses.	5 min.	_____	5 min.	5:55 P.M.
Fudge Sundae	Dish out ice cream, and spoon out sauce.	10 min.	_____	10 min.	Prepare after main course.

WORK SCHEDULE FOR MENU

3:30 P.M.	Set table.
4:00 P.M.	Assemble ingredients and equipment.
4:25 P.M.	Scrub potatoes and put in oven. Turn on oven to 191 °C [375° F.]
4:40 P.M.	Prepare chicken and put in oven.
5:00 P.M.	Prepare salad and refrigerate.
5:30 P.M.	Prepare green bean casserole and put in oven.
5:45 P.M.	Put refrigerator rolls in pan and put in oven.
5:50 P.M.	Put teakettle of water on to heat.
5:55 P.M.	Pour milk into glasses. Put butter or margarine on table.

After main course is eaten: Prepare sundaes.



National Broiler Council
Entertaining can be less hectic if you follow a work schedule when preparing the food.



Chapter 17

Preparing Dairy Foods

To help you to . . .

- **Understand what happens to milk and cream when they are cooked or frozen.**
- **Choose ways to serve cheese and milk products.**
- **Select the correct procedures for cooking milk and cheese.**

Do you enjoy foods such as pizza, scalloped potatoes, or cheeseburger? Each of these has one point in common—each uses a dairy food in its preparation. Dairy foods, such as milk, cream, and cheese, are common in cooking the world over, giving flavor, richness, and variety to meals. They also provide valuable nutrients—proteins, calcium, riboflavin, and vitamins A and D.

COOKING WITH MILK AND CREAM

Look for these terms

bombe
curdle
double boiler
mousse
scalded milk
scum

lorida Dept. of Citrus
Cheesecake garnished with orange sections.

Milk by itself is a tasty, nutritious beverage. It is also a common ingredient in many recipes, from cream sauce and casseroles to baked products and frozen desserts.

When You Cook with Milk

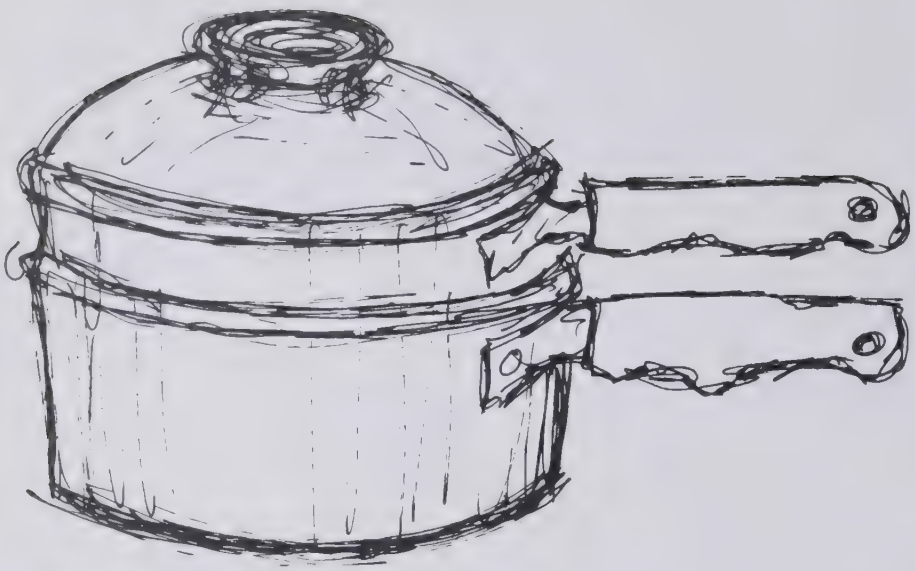
When you heat milk, particles settle on the bottom and sides of the pan. These are milk solids, deposited on the pan by the action of the heat on milk. If the milk overheats, lactose—the sugar in the solids—caramelizes or browns, and the solids scorch rapidly. As a result, the milk develops an off-flavor.

Heat also affects milk by causing a *scum* or skin to form on the surface. The scum is made up of some of the milk solids and fat, but it is undesirable because it is tough and rubbery. The scum can also create problems because it prevents steam from escaping. This can cause the milk to boil over if you are not watching it closely. To prevent a scum from forming, cover the pan or stir the milk constantly as it cooks.

If a scum forms, remove it from the milk and discard it. Otherwise, you will have unappetizing, chewy particles in the food.

What happens if you cook milk at too high a temperature? It *curdles* or separates into a liquid and many small lumps. Acids, such as lemon juice, also curdle milk. Curdling occurs more easily when you add milk to hot foods such as gravy or to acid foods such as tomato soup. How can you prevent milk from curdling? Use the following method:

- Pour some of the hot or acid mixture into the milk first, stirring constantly. By doing this, you raise the temperature or acid level of the milk so there is less chance of curdling.
- Gradually add the milk to the remaining mixture, stirring



Double boiler. Heat from boiling water in the lower pan cooks the food in the upper pan.

constantly. If you add the milk too quickly, however, the mixture will probably curdle. Sometimes vigorous beating can break up the curdling and make the mixture smooth.

Cook milk slowly, at temperatures below 60 °C [140° F.]. Modern ranges have top-of-the-range controls which can keep temperatures low enough to cook milk in a saucepan. On older ranges, however, the top-of-the-range temperatures may be too high. In that case, use a *double boiler*—a double pan. Water is placed in the bottom pan and food in the upper one. When the bottom pan is heated, the boiling water cooks the food in the upper pan at a low temperature.

A recipe may call for *scalded milk*. This means the milk is heated to just below boiling. Use low heat and cook the milk only until bubbles appear around the sides of the pan.

When you use cream or yogurt in a recipe, follow the same guidelines as for cooking with milk. Cream reacts more quickly to heat and acid because it is richer. Therefore greater care must be taken when using it in recipes.

WHEN YOU MAKE FROZEN DESSERTS

Undoubtedly frozen desserts are among the most popular foods prepared with milk. Frozen desserts include ice cream, sherbet, mousse, and bombe.

A *mousse* is frozen whipped cream or whipped topping, sweetened and flavored. Sometimes gelatin is added to give body to the mixture and help it retain its shape. A mousse is usually frozen in a decorative mold.

A *bombe* is made from two or more flavors of ice cream packed in a decorative mold and frozen. Unmolded, a bombe makes an attractive special-occasion dessert.

Have you ever had a frozen dessert with unpleasant large ice crystals in it? One of the main goals in making frozen milk desserts is to keep crystals from forming, resulting in a smooth mixture. This can be done in several ways:

- Fat in the mixture keeps crystals from forming. This means the more fat the mixture has, the smoother it will be. For this reason, ice cream made with cream is smoother and richer than one made with milk. It has more fat.
- Beating keeps crystals from forming in frozen mixtures. It also makes the mixture light and airy.

Let's Explore and Report

- Search for recipes using milk that would be appropriate to prepare in class. Keep in mind preparation time, skills and equipment needed, and cost. Compare cooking procedures with the principles discussed in this chapter.



United Dairy Industry Assoc.

Frozen desserts such as ice cream can be served plain or with assorted toppings.

SERVING AND COOKING CHEESE

Cheese can be served just as purchased or used in numerous recipes. Cheese offers distinctive flavors and textures as an appetizer, snack, or dessert or as part of a main dish. You may want to review the discussion of types of cheeses on pages 191–194.

When You Serve Cheese

Because fresh cheese, such as cottage cheese, is highly perishable, it should be served chilled. Its sweet, fresh flavor combines well with fruit to make delicious salads. It can also be mixed with other foods such as deviled ham or chopped vegetables and served as a dip.

Natural cheese, such as Cheddar, is best when served at room temperature. Remove it from the refrigerator about an hour before serving. If served chilled, it may be hard and lacking in flavor.

Firm natural cheese can be cut into cubes or wedges. It may be served in one piece on a cutting board with a knife or cheese cutter so people can help themselves. For snacks and appetizers, serve fresh fruit and vegetables as accompaniments. Include fresh pineapple sticks, cherries, peach slices, apple cubes, celery sticks, carrot sticks, pepper strips, radishes, and cucumber sticks.

For an elegant dessert, especially after a heavy meal, serve assorted cheeses with fresh fruit. Another idea is to top servings of fruit pie, such as apple or berry, with slices of sharp cheese. Warm the pie with the cheese just long enough to melt the cheese.

When You Cook with Cheese

Cheese is a concentrated food, high in protein and fat, so it must be cooked with care. If you overcook it, either at too high a temperature or for too long a time, it becomes tough and rubbery. The fat separates into globules of grease, which gives the food an unappetizing appearance.

Apple-Cheddar Fondue

Metric Weight	Metric Volume	Ingredients	Customary
230 g	480 mℓ	Shredded Cheddar cheese	2 cups (8 oz.)
25 g	40 mℓ	All-purpose flour	2½ tablespoons
0.5 g	0.5 mℓ	Grated nutmeg	⅛ teaspoon
0.5 g	0.5 mℓ	Ground mace	⅛ teaspoon
0.5 g	0.5 mℓ	Ground cinnamon	⅛ teaspoon
Dash	Dash	Salt	Dash
—	240 mℓ	Apple juice	1 cup

Yield: 480 mℓ [2 cups]
Pan: 1.9 ℓ [2-quart] saucepan and fondue pot
Toss together in a bowl cheese and flour until well mixed; set aside.
Mix together nutmeg, mace, cinnamon, and salt; set aside.
Heat apple juice in a 1.9 ℓ [2-quart] saucepan until it begins to bubble.
Turn heat to medium-low.
Add cheese 120 mℓ [a half cup] at a time, stirring vigorously after each addition until cheese is melted.
Add spices and salt.
Continue to stir constantly over medium-low heat until thickened.
Transfer to fondue pot. Follow manufacturer's instructions for using pot.
Serve with apple slices, fresh mushrooms, cocktail sausages, raw zucchini slices, or French bread cubes.

As with milk, cook cheese at low temperatures and for as short a time as possible. Keep in mind that cheese does not require long cooking—it needs only enough time to melt. One way to cut down on the cooking time is to cut the cheese into small pieces or grate it. If you want to melt cheese by itself, use very low heat or a double boiler.

Cheese is often cooked with other ingredients. The other foods should be either precooked or require a short cooking time and moderate temperatures. When cheese is used as part of a casserole dish, the mixture is usually topped with bread crumbs or other food to protect the cheese from the oven heat.

As you cook with cheese, you may notice that some varieties blend more readily than others. Processed cheese mixes easily with other ingredients. Cheddar has exceptional blending qualities, making it one of the most popular cheeses for cooking. Fresh cheeses, such as cottage and cream cheese, are difficult to use in cooking because they do not blend well unless they are beaten into the mixture.

USING CONVENIENCE FORMS

Dry milk, a convenient form of milk, is ideal for cooking. It can be added without reconstituting to mixtures such as casseroles and meat loaf. When substituting it for milk in baking, be sure to add the required amount of water for the amount of dry milk used. Dry milk is especially convenient to take along on camping trips and cookouts since it needs no refrigeration.

Non-dairy whipped toppings are made from vegetable oils that have been whipped, fla-



United Dairy Industry Assoc.

Cheese shows its versatility in this party scene. It is served as is with assorted breads and crackers. It is also used as an ingredient in the cheese fondue, upper right.

vored, and stabilized. They store well and are handy to use wherever dessert toppings are needed. You can use them in almost any recipe calling for whipping cream. Some people have the impression that these toppings are lower in calories than whipped cream. However, both have about the same number of calories.

Cheese is available in many convenience forms—packaged and ready to use. It can be purchased sliced or grated. Slices are sometimes individually wrapped. It can be made up into dips and spreads, and combined with other foods.

Let's Explore and Report

- Select several cheese main-dish recipes that can be prepared in class. Point out the principles of cheese cooking used in each recipe.
- List the ways heat affects dairy foods. Opposite each indicate the proper cooking method to insure good results.
- Make a list of the different convenience forms of cheese available in your local store, such as sliced or grated. List the size of the package and the price. Compare with the price of the same amount sold plain or in one piece. Compare your findings with those of your classmates. What conclusions do you reach?

What Would YOU Do?

- Several of your friends have become interested in the many varieties of cheese available. They have decided to give a cheese-tasting party, and have asked you to select a variety of cheeses and accompanying snacks to serve to 20 people.



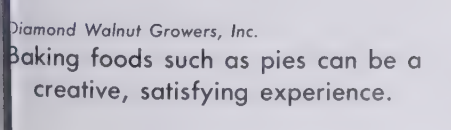
Chapter 18
Preparing Breads and Cereals

To help you to . . .

- **Recognize how each ingredient functions in cakes, cookies, pastries, and breads.**
- **Understand why specific methods are used to prepare cakes, cookies, pies, and breads.**
- **Select the proper methods to cook and use cereal products.**

Baked goods are so popular that most of them can either be purchased ready-to-eat or easily prepared from mixes. Why, then, should you learn to prepare baked goods from a recipe—cook them from scratch? Baking can be a creative challenge. Just mastering the art of making tender, juicy apple pie, for instance, can be a satisfying accomplishment, one that may encourage you on to more creative cooking.

Look for these terms
batters
doughs
hot spot
pastry
shortened cakes
unshortened cakes



Diamond Walnut Growers, Inc.
Baking foods such as pies can be a creative, satisfying experience.

PRINCIPLES OF BAKING

Countries the world over have their typical baked products. In the United States, apple pie is a favorite. Germans enjoy apple strudel—a long narrow cake made of flaky pastry filled with apple slices. Greeks savor baklava—layers of filo (flaky pastry) and nuts drenched with honey and cut into small squares. Although these foods have different shapes and flavors, they all contain the same basic ingredients.

Basic Ingredients for Baking

Baked products need some, and often all, of these ingredients: flour, liquid, leavening, fat, sugar, eggs, and seasonings and flavorings. Why, then, are there so many different kinds of baked products? The difference is created by the amounts of ingredients specified in the recipe and by the methods used to combine them.

FLOUR

All-purpose flour is generally used for most baked products. However, some cake recipes may specify cake flour, which is finer in texture and does not have as much gluten (see page 202) as all-purpose flour has. As a result, it gives a finer texture to cakes. Whole-grain flours and cornmeal are also used in baking. Unless specified, however, use all-purpose flour.

What does flour do for a baked product? It provides the structure. When liquid is added, the flour particles absorb it and swell and stick together. During mixing or kneading (see page 328), the gluten forms an elastic mesh composed of cells. The cells trap air or gas created by the leavening. When the product is heated, the air or gas expands. The proteins and starch

in the flour set, giving the baked product its final shape.

LIQUIDS

While liquids help the flour to form the structure, they also make possible many of the chemical changes which take place in the mixture. Water and milk are the most commonly used liquids. Others, such as fruit juice, sour cream, yogurt, and vegetable water, may also be used.

When milk is used as the liquid, it adds nutritive value, flavor, and richness, and helps the crust to brown better.

LEAVENING

Leavening agents help the baked product to rise. They do this by producing air or gas which is trapped as bubbles by the cells in the mixture. As the air or gas expands, it causes the product to rise.

The four basic types of leavening are: air, steam, gas formed by chemical action, and yeast.

- *Air.* Air can be trapped in batter in many ways:

  Beating egg whites.

  Creaming fat and sugar.

  Sifting flour.

  Beating batter.

  Folding and rolling dough over and over.

- *Steam.* To leaven a product by steam, the mixture is baked at a high temperature. The heat causes the water to turn to steam and the product rises. Have you ever eaten filled cream puffs? They are leavened by steam, which leaves a cavity in the center for holding the filling. Popovers, a type of quick bread, are also leavened by steam.

- *Gas Formed by Chemical Action.* Baking soda and an acid, such as sour milk, combine to form a gas which causes a product to rise. Baking powder is a combination of baking soda and a dry acid. When mixed with a liquid, it reacts to give off a gas which serves as a leavening.

- *Yeast.* Yeast is a microscopic plant which reproduces rapidly if it has food, moisture, and warmth. Usually sugar is added to the mixture to help the yeast grow rapidly. As it grows, it creates a gas which acts as a leavening. Yeast can be purchased as active dry or compressed. The compressed type comes in a cake form, is highly perishable, and must be kept refrigerated. Dry yeast keeps on the cupboard shelf and usually has a date stamped on the package.

OTHER INGREDIENTS

- *Fat.* Any fat or oil can be used in baking. The most common are butter, margarine, cooking oil, lard, and shortening. Fat makes the product rich and tender and adds flavor. It also helps to increase the volume and aids in browning.

- *Sugar.* Sugar gives flavor and aids in browning. You can use granulated sugar, brown sugar, honey, or molasses as sweeteners.

- *Eggs.* Eggs serve a number of purposes in baking. When beaten, they trap air for leavening. They help to emulsify batters and keep them from separating. Eggs also add flavor and richness and give a tender texture.

- *Seasonings and Flavorings.* Many kinds of seasonings and flavorings can give distinctive flavors to baked products. These include spices, flavor extracts, chocolate, nuts, fruit, and juices.

Baked products are made from two types of mixtures—batters and doughs. *Batters* are thin mixtures which can be poured and are usually used for pancakes, cakes, and some yeast mixtures. *Doughs* are stiff enough to be handled and shaped.

Oven Temperatures

When you bake any leavened product, be sure to use the exact temperature called for in the recipe. Why? When the mixture is put into the oven, the crust begins to heat. As moisture evaporates, the crust dries and its temperature rises. It begins to brown.

What happens if the oven temperature is too high? The crust forms too fast. This means the product cannot expand as much as it should. Sometimes the top of the crust cracks as the product tries to rise. The excess heat will also overbrown the

crust before the inside is completely baked.

What happens if the temperature is too low? The dough may dry out. The gluten and starch in the flour cannot set, so the leavening gas or air escapes. As a result, the product often falls.

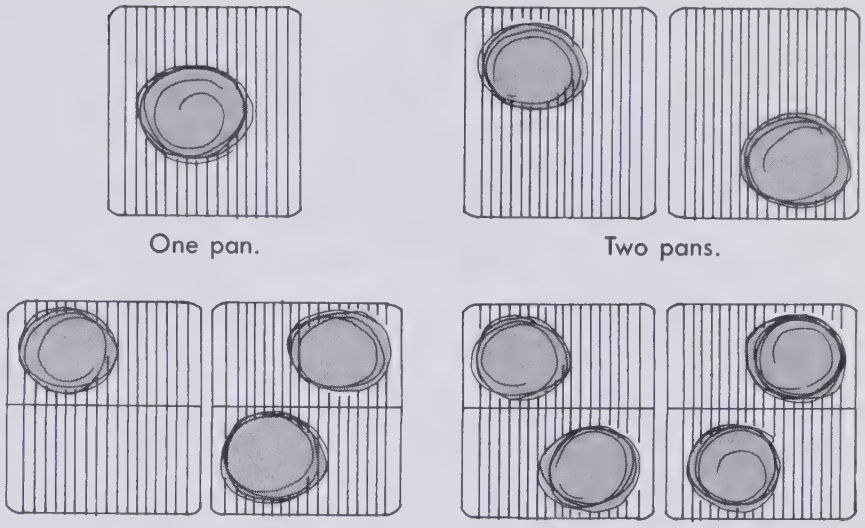
Be sure to preheat the oven when you bake leavened products. The oven must be at the specified temperature when the pan is placed in the oven.

How To Prepare Pans for Baking

Why is so much emphasis placed on using the right size pan for baking? As explained earlier, recipes are developed to fit a certain size pan. If the pan is too large, the product will be thin and may dry out during baking. If the pan is too small, the dough or batter will flow over the side of the pan.

If the mixture contains shortening, the pans should be greased and floured, unless the recipes state otherwise. Greasing and flouring help the product to come out easily after it is baked. The flour keeps the shortening from being absorbed by the crust. Be sure to use an *unsalted* shortening. The salt in butter or margarine will cause the crust to overbrown and the product to stick to the pan.

Never use waxed paper to line a baking pan. The wax melts in the heated oven and is absorbed by the crust.



Heated air in an oven must be allowed to circulate around pans freely. When you bake, place pans in the oven as shown.

Sometimes a very rich cake, such as one containing dried or candied fruit, may stick to the pan even though it is well greased and floured. To prevent this, cut a piece of brown wrapping paper to fit only the bottom of the pan. The cake will be easy to remove.

Cakes without shortening, such as angel food, are baked in pans which are neither greased nor floured. The plain walls of the pan provide a surface for the batter to cling to and rise. If the pan is greased, the cake will not be able to rise as well.

How To Place Pans in Oven

How you arrange pans in the oven affects the way batters and doughs bake. The heated air must circulate around pans freely.

If you have just one pan, place it in the center of the oven. Two pans should be placed on separate racks in corners diagonally opposite each other. If you have a large oven and are using four pans, place two in diagonally opposite corners on one rack and the other two on the other opposite corners on the second rack. These arrangements allow plenty of space for the heated air to circulate and bake the products evenly.

Be sure the pans do not touch the sides, bottom, top, or door of the oven. Also be sure that the pans do not touch each other. If they touch, they will create a *hot spot* or concentra-

tion of heat, and the product will overbrown in that area.

How To Remove Baked Products from Pans

As a rule, remove all baked products from the pans immediately. However, there are two exceptions:

- Cakes without shortening, such as angel food, are cooled in the pans. Invert the pan and allow to cool completely before removing the cake.
- The recipe may give other instructions. Often a quick bread or bar cookie must cool in the pan. Some cakes must cool for five or ten minutes before they are removed from the pan.

To remove bread or cake from a pan, run a spatula or knife around the sides of the pan. Place a cooling rack over the top, invert, and remove the pan. Place another cooling rack on the cake bottom and turn the cake right side up.

Unless otherwise directed, remove cookies with a wide spatula as soon as they are taken out of the oven. Place on a rack to cool.

HOW TO MAKE CAKES

Cakes can be made in great variety—yellow, white, spice, chocolate, lemon, to name a few. Basically, however, there are only two types of cakes—shortened and unshortened. *Shortened cakes,* once called butter cakes, contain fat. *Unshortened cakes* contain no fat and usually rely on beaten egg whites for leavening. *Chiffon cakes* are a combination of both—they contain oil and baking powder but they also use beaten egg whites for leavening.

Shortened Cakes

Shortened cakes contain a fat such as butter, margarine, or shortening, as well as flour, salt, sugar, eggs, and a liquid. They are leavened either with baking powder or with baking soda and an acid such as sour milk.

Many different flavorings can be added to cakes, such as chocolate, spices, and fruit. What is your favorite kind of cake?

To get the best results in making a cake, you must mix the ingredients together according to specific methods. Three basic methods can be used to mix cakes. Any will give you good results if followed accurately. The method you use will depend on the time you have and your personal preference. Some people seem to get much better results from one method than they do from another.

The three methods of mixing are known as *conventional method, quick-mix method,* and *chiffon-cake method.*

- *Conventional Method.* Cream fat and sugar together, and beat in eggs. Sift together dry ingredients such as flour, salt, baking powder, and seasonings. Add flour and liquid to creamed mixture. Add dry ingredients by thirds and liquids by halves, beginning and ending with the dry ingredients. By using this method, an emulsion is formed which keeps the mixture from separating. If you add the liquid last, the mixture will separate and curdle.
- *Quick-Mix Method.* This is also known as the "One-Bowl Method." Use a large mixing bowl and combine the flour, sugar, shortening, and part of the milk. Blend by hand or with a mixer. Mix in remaining ingredients.
- *Chiffon-Cake Method.* All the ingredients except egg whites and cream of tartar are beaten in a large bowl. Beaten egg whites are then folded into the batter.

Unshortened Cakes

Unshortened cakes depend on air beaten into egg whites for leavening. The two most popular types are angel food and sponge cakes. Egg whites are beaten with part of the sugar to form a meringue and folded into the batter.

Test for Doneness

When a shortened cake is done, it will pull away from the sides of the pan. An un-

General Foods

A basic yellow cake can be made in many different shapes with a variety of toppings.


FEBRUAR
JANUARY
APR



General Foods

For an easy yet elegant dessert, cut an angel food cake into three horizontal layers. Fill and frost with flavored whipped topping.

shortened cake will continue to cling to the pan even when done. When touched lightly, the tops of both shortened and unshortened cakes will spring back if the cakes are done.

Frosting on a Cake

Frosting gives a cake a finished, attractive appearance and also helps to hold layer cakes together.

Not all cakes need to be frosted. You may prefer a plain loaf cake or a layer cake with the top lightly sprinkled with confectioner's sugar. Do you have a favorite kind of frosting, or do you prefer plain cake?

Frostings can be cooked or uncooked. Some cooked frostings require the use of a candy thermometer. The mixture is cooked to a certain temperature, cooled slightly, then beaten until creamy. Other frostings are cooked over hot water, beating with a mixer until the mixture stands in soft mounds.

Uncooked frostings are generally prepared by creaming butter or margarine. Powdered sugar and flavoring are beaten in until the right consistency to spread.

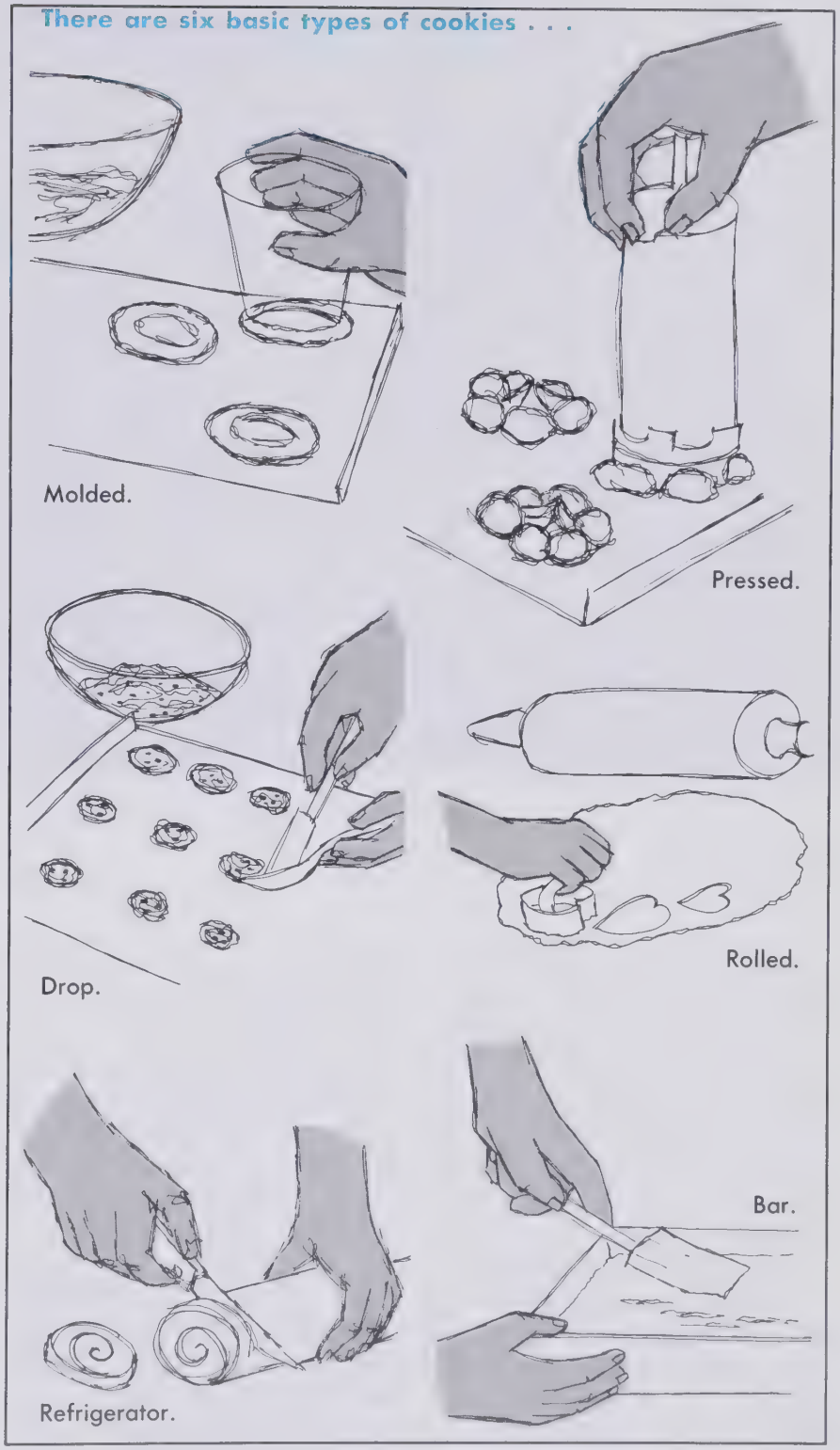
Generally, a cake recipe will specify a certain type of frosting to go with it. However, you can use any frosting you prefer, as long as the flavor blends with that of the cake.

HOW TO MAKE COOKIES

Although the variety of cookies seems endless, there are only six basic kinds. These are drop, bar, refrigerator, molded, rolled, and pressed. Once you learn to make these, you can prepare many variations.

- *Drop Cookies.* The dough is dropped from a teaspoon onto the baking sheet.
- *Bar Cookies.* Brownies are among the most popular bar cookies. Generally, bar cookies are baked in a square or rectangular pan. When slightly cool, they are cut into squares.
- *Refrigerator Cookies.* Rolls of dough are chilled in the refrigerator, then sliced with a sharp knife and baked.
- *Molded Cookies.* The dough is usually shaped with the hands into balls the size of large walnuts. Some molded cookies are flattened before baking.
- *Rolled Cookies.* The dough is rolled out on a board and cut into any shape.
- *Pressed Cookies.* The cookies are shaped with a cookie press. The dough must be kept pliable to produce the desired shapes.

When shaping cookies, make them all the same size so they





Kraft Foods

Color is a good sign of whether or not cookies are done. They should be a delicate brown.

bake evenly. If you bake cookies frequently, invest in an extra baking sheet. While one is in the oven, you can be preparing the second sheet of cookies and thus save time. Avoid putting cookies on a hot baking sheet—they will melt and spread and lose their shape.

Because most cookies are small, they can be easily overbaked. Always test cookies a few minutes before the baking time is up. Remember, even when you take them from the oven, they continue to bake until you remove them from the hot baking sheet.

When done, all cookies will be delicately browned. You can give drop and bar cookies an extra test by pressing the tops lightly with your finger—the imprint should show slightly.

HOW TO MAKE PASTRY

Pastry is a term applied not only to pies but also to other baked, flaky delicacies such as tarts and puff pastries. Since the preparation of puff pastry is a complex skill, it should be attempted only by the experienced cook.

Pies and tarts are a delectable combination of a flaky crust and a flavorful filling. A pie can be made of a single crust with a filling and perhaps a topping such as a meringue. It can also be a two-crust pie with the filling in between. A tart is a small, individual-size pie. It usually has one crust, a filling, and a topping.

Pie Crust

Although pie crust is made from basic ingredients—flour, fat, water, and salt—it is perhaps one of the most difficult mixtures to prepare. Many factors affect the preparation of pie crust, such as the kinds of ingredients, their proportions and temperature, how you handle the dough, and yes, even the weather.

The ingredients all serve important functions. The flour and water combine to form the dough while salt brings out the flavor. The shortening makes the dough tender and flavorful. It also forms flakes or layers of dough to give pie crust its characteristic flakiness.

What kind of fat should you use for pastry? That depends on the results you want. Many people prefer shortening because it gives a flaky crust. Others prefer lard, chicken fat, butter, or margarine for the extra



General Mills, Inc.

Pastry should be tender, flaky, flavorful, and hold its shape.

flavor. These fats, however, make a pastry with a slightly different texture. Instead of being flaky, it has a short, tender texture, similar to that in cookies. This type of crust is often used for tarts.

Pastry can also be made with oil instead of solid fat and with hot water instead of cold.

Pastry must be handled with care. Unlike other doughs, you are much safer in mixing pastry too little rather than too much. To be flaky, the pastry must have little particles of shortening separated by moistened flour. This is why shortening is cut into the flour—to keep it in small particles.

Handle the dough as little as possible. If you knead or mix the dough with your hands or overhandle it, the gluten in the flour is developed. While gluten is needed to form the structure in bread, it should be avoided in pastry because it makes the texture tough and hard instead of flaky.

If you use too much flour when rolling the dough, the flour will be absorbed by the dough. As a result, the pastry will be tough and hard because of the excess flour.

When preparing pastry, cut the shortening into the flour with a pastry blender or two knives until the mixture has the texture of coarse cornmeal. Add water by tablespoons, mixing lightly with a fork after each addition. Since the amount of water given in the recipe is not exact, you must try to achieve a certain texture in the dough. As you add the water, bring the



United Dairy Industry Assoc.

A crumb crust is generally used with a filling that does not have to be baked, such as ice cream or gelatin.

pastry particles together with a fork to form a ball of dough. You may use your hand to gather the particles, but try not to overwork the dough. Use just enough water to keep the crust from being crumbly but not so much that it is wet and sticky. In humid weather, you may need to use less water than you would in dry weather.

Recipes often call for allowing the dough to rest before it is rolled. This is not necessary, but it gives you time to prepare the filling and perhaps clean up your work area. Be sure to cover the dough with waxed paper and a towel so it does not dry out.

You can roll pie crust on any clean, washable surface—enamel, wood, or plastic. A pastry cloth is best since it requires the least amount of flour. Use only enough flour to keep pastry from sticking. If the dough sticks, scrape it off with a knife or spatula, remove any traces, and dust the area with flour.

What should you do if the crust cracks, a piece breaks off, or the pie pan rim is not covered in a few places? Any of these can happen even to the most experienced pie baker. The solution is to patch the dough. Cut off a piece from the trimmings. Dampen the area to be

patched slightly; apply the patch. Press firmly so it sticks and smooth out the edges.

Crusts for one-crust pies may also be made from crumbs such as graham crackers, gingersnaps, and vanilla wafers. The crumbs are mixed with sugar and melted butter or margarine. They may be seasoned with spices. Chopped nuts, coconut, and other ingredients may also be added. The crust may be chilled or baked.

How To Bake Pies and Shells

Pie shells are usually baked at 220 °C to 230 °C [425° F. to 450° F.] for about 20 minutes. The crust should be a light or golden brown with a slight blistery appearance. As a rule, color is the best method to judge doneness.

Bake two-crust pies at 220 °C to 230 °C [425° F. to 450° F.] for about 30 to 50 minutes. The time depends on the type of filling used. Judge doneness by the color of the crust—it should be a golden brown.

Fillings for Pies

Pies can be made with countless combinations—fruit, custard, pudding, cream, chiffon, and frozen. If the filling must be baked, make a two-crust pie or unbaked shell. If it is already prepared and ready to eat, such as pudding, it should be put into a baked shell or crumb crust.

Fruit-filled pies are among the most popular. You can use either fresh, frozen, or canned fruit. The fruit is usually sweetened and the juice thickened so the filling holds its shape when the pie is cut. Flour, cornstarch, or tapioca is most commonly used to thicken fruit pies.

Cream pies are made by cooking eggs, flour, milk, and flavoring into a custard and pouring the mixture into a baked shell. Some of the more popular cream pies include lemon, banana, and butterscotch These pies are usually topped with a meringue. The meringue is spread over the hot filling and browned about five minutes in a hot oven at 220 °C [425° F.]. You can use dessert topping or whipped cream instead of meringue, if you wish. In that case, wait until the filling cools before spreading the topping.

A deep dish pie does not have a bottom crust. The filling is usually baked in a casserole or baking dish. It can be topped with a full crust, lattice crust, or pastry cut-outs.

An open-face pie is baked with only a bottom crust. Berry and other fruit pies can be baked in this manner. The pie can be topped with whipped cream, dessert topping, cheese, or a sauce.

A chiffon pie has a light-textured filling made from gelatin and flavored with fruit. Cream can be added for richness. The filling is poured into a baked shell and chilled.

Let's Explore and Report

- Select three pie recipes. What nutrients are supplied? How many calories per serving? (See Appendix G).
- Select your favorite baked product—cake, cookie, or pie. Research the history. Prepare a five-minute talk to give in class.
- Using two round layer cake pans, prepare a demonstration on how you would frost a cake.

Look for these terms
biscuit method
knead
muffin method

HOW TO MAKE QUICK BREADS

What are quick breads? They are breads that can be prepared and baked in a relatively short time when compared to yeast breads. Quick breads are usually leavened with baking powder and can be baked as soon as they are mixed. Yeast breads, on the other hand, must be allowed to rise before baking.

Two basic methods are used for preparing quick breads—the muffin method and the biscuit method. The muffin method gives a batter that varies in consistency from thin to very thick. Thin batters are usually used for pancakes and waffles. Heavier batters are used to make muffins and breads. Many of these



Cling Peach Advisory Board

A lattice crust makes an attractive topping for a deep dish pie.

breads are popular at breakfast, such as date muffins and nut bread.

The biscuit method makes a dough that is slightly kneaded, shaped with a rolling pin, and cut. Some biscuit doughs are not as thick and can be dropped with a spoon onto the baking sheet.

- *Muffin Method.* Blend liquid ingredients together. Sift dry ingredients together. Pour liquid all at once into the flour mixture and stir only until the flour is moistened. Do not stir the mixture any more than needed to moisten the flour. If you overstir, the breads and muffins will have large tunnels and the top crust will peak in the center.
- *Biscuit Method.* Sift flour with salt and baking powder into a bowl. Cut shortening into the flour until the mixture resembles coarse crumbs. Add liquid. Knead the mixture rapidly and gently (see page 328) to help develop the gluten and distribute the moisture. Cut dough into shapes and bake.

HOW TO MAKE YEAST BREAD

Have you ever walked into a bakery and smelled the tantalizing aroma of bread baking? Yeast not only leavens bread but it also gives a characteristic



Diamond Walnut Growers, Inc.

For a perfect texture such as this, the batter for quick breads and muffins should not be overmixed.

White Bread

Metric		Ingredients	Customary
Weight	**Volume**		
700–830 g	1.3–1.6 ℓ	Unsifted all-purpose flour	5½–6½ cups
36 g	45 mℓ	Sugar	3 tablespoons
12 g	10 mℓ	Salt	2 teaspoons
1 package	1 package	Active dry yeast	1 package
—	240 mℓ	Water	1 cup
—	240 mℓ	Milk	1 cup
45 g	45 mℓ	Butter or margarine	3 tablespoons

Temperature: 205 °C [400° F.]
Yield: Two loaves
Baking pan: Two 22 × 12.5 × 6.5 cm [8½- × 4½- × 2½-inch] loaf pans
Preheat oven to 205 °C [400° F.].
Mix in a large bowl thoroughly 480 mℓ [2 cups] flour with the sugar, salt, and undissolved dry yeast.
Combine water, milk, and butter or margarine in a saucepan.
Heat over low heat until liquids are warm. Butter or margarine does not need to melt.
Add warm liquid gradually to dry ingredients.
Beat 2 minutes with electric mixer at medium speed, scraping bowl occasionally.
Add 180 mℓ [¾ cup] flour, or enough to make a thick batter.
Beat at high speed 2 minutes, scraping bowl occasionally.
Stir in enough additional flour to make a soft dough.
Turn out onto lightly floured board.
Knead until smooth and elastic, about 8–10 minutes.
Place in greased bowl, turning to grease top of dough.
Cover dough lightly with plastic wrap or foil and then cover bowl with a clean towel.
Let rise in warm place, free from draft, until doubled in bulk, about 1 hour.
Punch dough down.
Turn out onto lightly floured board. Cover and let rest 15 minutes.
Divide dough in half.
Shape into loaves.
Place in two greased 22 × 12.5 × 6.5 cm [8½- × 4½- × 2½-inch] loaf pans.
Cover.
Let rise in warm place until doubled in bulk, about 1 hour.
Bake at 205 °C [400° F.] about 25–30 minutes or until done.
Remove from pans and cool.

flavor and aroma that make bread one of the world's favorite foods.

Making yeast bread is not a difficult process, once you learn the steps and how to handle the dough. However, it is time-consuming because the dough must be allowed to rise twice—once after it is mixed and kneaded and once again after it is shaped. Usually, you can plan your activities so that you have something else to do at home while the dough is rising.

The ingredients for yeast dough can be mixed in two ways—by the conventional



Fleischmann's Yeast

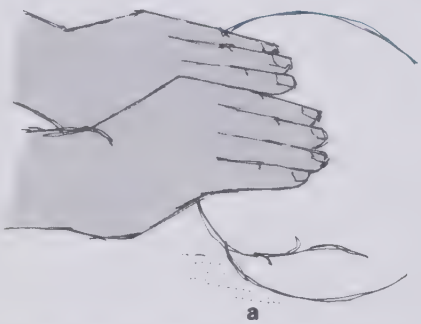
Once you learn the basic steps for making yeast bread, you can make many variations—white, whole grain, and sweet.

method or the mixer method. Both methods give equally good results. Use whichever is more convenient and works better for you.

• *Conventional Method.* Dissolve active dry yeast in warm water, 41 °C to 44 °C [105° F. to 110° F.]. Heat the remaining liquid along with fat, sugar, and salt until it is hot but not boiling. Pour hot liquid into bowl and allow to cool to warm. If the liquid is too hot or too cold, the yeast will not grow. The liquid should be about 44 °C [110° F.]. If you do not have a thermometer, test a few drops on your wrist. They should feel slightly warm. Measure flour. Mix the softened yeast into the liquid, then stir in the flour. Most recipes give a range of flour, such as 600 to 660 g [5 to 5½ cups] rather than an exact amount. This is because flours vary in how much liquid they absorb. Humidity in the air may also make it necessary to use more flour. Mix in enough flour to form the dough specified in the recipe—either a soft or stiff dough. Soft doughs produce more tender breads which rise more rapidly. In either case, you should be able to handle the dough easily with your hands.

• *Mixer Method.* Combine one-third of the flour, the sugar, salt, and undissolved dry yeast in a large bowl. Stir well, add

To knead dough . . .



a

Fold dough over in half toward you.



b

Push down on dough with the heels of both hands.



c

Give dough a quarter turn. Repeat process for 8–10 minutes. Be sure work surface is floured just enough so dough does not stick. Do not over flour—it will make the dough too stiff.

softened fat and very warm water right from the faucet or very warm milk, 49 °C to 55 °C [120° F. to 130° F.]. Beat with an electric mixer at medium speed for two minutes, scraping the bowl occasionally. Add enough flour to make a batter and beat at high speed for one minute. Stir in remaining flour with a wooden spoon.

After the dough is mixed, it must be kneaded. *Kneading* helps the gluten to form so the bread will rise the way it should. It also helps to mix the ingredients uniformly throughout the dough. As you knead the dough, notice how it changes from a sticky, rough dough into a silky-smooth, elastic ball.

As discussed earlier, all-purpose flour develops the best gluten when kneaded. Although whole wheat flour has gluten in it, parts of the kernel in the flour keep it from forming. Rye flour has little gluten. Therefore if you make whole-grain bread, some all-purpose flour must be used so that gluten is developed during the kneading. Without all-purpose flour, the bread rises very little and has a coarse and heavy texture. Many people, however, enjoy this type of bread.

The use of soy flour and wheat germ in yeast bread has become popular in recent years. People sometimes add these ingredients to any bread recipes, even though they are not listed. Unless used in the right proportions, soy flour and wheat germ can keep yeast bread from rising. Therefore be sure to use recipes developed specifically for use with either of these ingredients.

After the dough is kneaded, it must be allowed to rise. Grease a large bowl and place the ball of dough in it. Rub the dough against the greased bowl. Then turn the ball over so the greased surface is on top. This keeps the dough from drying out so it can rise more easily.

The grease alone will not prevent the dough from drying. Cover the top of the dough lightly with a plastic film or foil. Then cover the bowl with a clean towel. If the dough dries out, a crust forms. It should be removed and thrown away or it will form heavy streaks throughout the bread.

The dough rises by the growing action of the yeast. To grow, the yeast needs a warm area. The room temperature should be from 24 °C to 30 °C [75° F. to 85° F.]. If it is cooler than that, fill a large bowl half full of hot water. Place a rack on the bowl and set the bowl of dough on the rack above the hot water. Cover completely.

How do you know when the dough has reached the volume it should? Gently press two fingers into the surface. If the depression you made remains in the dough, it is ready to shape. If the depression springs back up, the dough must rise a little longer.

When the dough has doubled in volume, it must be punched down. Punching down removes excess gases so you can shape the dough. Push your fist down into the center of the dough as far as you can. Pull the dough away from the sides of the bowl and press down toward the center to form a ball. Turn the ball out on a lightly floured board or pastry cloth.

Dough can be shaped into many different forms. Bread can be made into long loaves, braids, or rounds. Rolls can be shaped into cloverleaves, sailor's knots, or crescents. The shape is limited only by your imagination. Yeast dough is pliable and fun to work with. Once you become accustomed to handling it, you will discover numerous ways of shaping it.

After dough is shaped, it must be allowed to rise again. Follow the same procedure used for the first rising, but do not grease the tops. Merely cover them with a towel. Use the fingertip test to tell if the dough has reached the correct volume. If the dough does not rise long enough, it will be compact and heavy. It if rises too much, it will have a coarse open crumb and may even collapse when baked.

Yeast breads and rolls must be baked in a preheated oven. Follow the exact temperatures specified in the recipe. Yeast doughs bake at different temperatures, depending on the ingredients used. Plain doughs made of flour, water, yeast, salt, and a little sugar usually bake at higher temperatures than rich doughs using eggs and milk. Lower temperatures for rich doughs help keep them tender and allow them to brown but not excessively.

Shortly before the end of the baking time, check the product to see if it is done. It should be nicely browned, neither too pale nor too dark.

Yeast bread may also be made by the batter method. Instead of a dough, a yeast batter is mixed and allowed to rise in the bowl or pan. This method produces a bread that is very coarse in texture with an uneven surface. However, this method saves a great deal of preparation time and still gives a product with the characteristic yeast flavor.



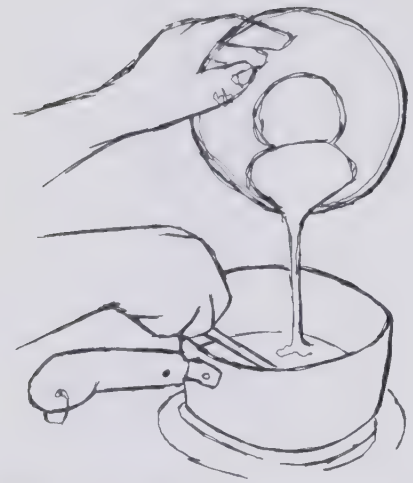
To tell if dough has reached full volume in the first rising, gently press two fingers into the surface. If the depression you make remains in the dough, it is ready to shape. If the depression springs back up, the dough must rise longer.

Let's Explore and Report

- Search for yeast bread or roll recipes to prepare in class, keeping in mind preparation time, skills and equipment needed, and cost.
- Make up a poster showing some of the basic ways yeast rolls can be shaped.
- Have a class contest to see who can create the most unusual-shaped bread or rolls.

HOW TO PREPARE PASTA

Pasta—noodles, spaghetti, and macaroni—must be cooked



When using flour or cornstarch as a thickener, first blend a little liquid into it. Mix until smooth and then pour into liquid to be thickened. This helps prevent lumping.

in boiling water before it can be eaten or used in a recipe.

To cook pasta:

- Use 1.9 ℓ [two quarts] of water and 15 mℓ [1 tablespoon] salt for every 454 g [8 ounces] of pasta.
- Bring the water to boiling in a large kettle.
- Add pasta gradually so the boiling does not stop. If it stops boiling, the pasta will stick together. How do you fit long spaghetti into a medium-size pan? Place the ends of spaghetti in the boiling water. As the spaghetti softens, gradually coil it around the pan until it is completely under the water.
- You can add 5 mℓ [1 teaspoon] of cooking oil to the water to keep it from foaming and to keep the pasta from sticking together.
- Stir pasta occasionally to keep it from sticking.
- Cook only until just tender. It should be cooked but still firm in the center. Italians call this *"al dente,"* meaning "to the tooth."
- If the pasta is to be used in a recipe that will be cooked, shorten the boiling time slightly so it is removed before completely cooked.
- Drain immediately and well in a sieve, colander, or wire basket.
- If you must cook pasta ahead of time, keep it hot in a strainer over hot water. The steam will reduce sticking.

HOW TO USE THICKENING AGENTS

Some cereals are used to thicken sauces, gravies, and desserts. These include all-purpose flour, cornstarch, and tapioca.

- *Flour.* All-purpose flour is commonly used to thicken cooked pie fillings, fruit pies, cream sauces, and gravies. When liquid is thickened with flour, it becomes opaque and sometimes milky colored. When flour is mixed with liquid, it tends to lump. To prevent lumping, add liquid gradually to flour, stirring constantly.
- *Cornstarch.* Next to flour, cornstarch is most commonly used as a thickener. It is much stronger than flour—only half as much cornstarch is needed as flour for the same amount of liquid. Cornstarch thickens a product but does not cause it to turn opaque. For this reason, it is popular for cooked desserts or when you want the food particles to show through the sauce. It is often used to thicken fruit pie fillings if a clear, bright juice is desired. It also gives a smoother texture than does flour. If cornstarch is added dry to any liquid, it will lump. To prevent lumping, place cornstarch in a small dish. Add a small amount of liquid, a little at a time, and stir well until the cornstarch is completely moistened. Pour the cornstarch liquid into the mixture, stirring constantly. Cook, stirring constantly, until the mixture thickens and becomes clear. Do not overcook cornstarch mixtures—they will thin out.
- *Tapioca.* Tapioca is generally used in preparing desserts, such as puddings, and as a thickening for fruit pies. When tapioca cooks, part of it dissolves to thicken the liquid. However, small, translucent particles remain throughout the mixture.

USING CONVENIENCE FORMS

Many types of convenience foods are available to help you create baked goods.

Boxed mixes for cakes, cookies, and breads offer many ideas on the package for variations.

Cake mixes, for instance, can be baked and then topped with fruits or other mixtures. You can also add ingredients to the mixes to give different textures and flavors.

If you enjoy making pies but do not have time to make the crust from scratch, use a boxed mix or pastry sticks, or buy ready-made crust in a foil pan. Even if you are an inexperienced baker, you can still make pastries with puff paste. Many ethnic grocery stores sell frozen filo, a puff pastry dough. Use it for making strudel, baklava, or other baked products calling for puff paste.

If you enjoy home-baked bread but lack the time to prepare your own, try some of the frozen doughs that need only be thawed and baked.

Let's Explore and Report

- Search for six recipes combining pasta, grits, or rice with a high-quality protein such as chicken or fish. Make up a menu for each.
- Survey neighbors and relatives to find out how many prepare baked products from scratch and how often. Compare your findings with your classmates.
- Research information on the latest trends in home baking. Prepare a report.
- Select a cake mix. Search for recipes using the cake mix but with variations. Find as many ideas as you can. Prepare a visual display showing the different ways the mix can be used. Include illustrations and recipes.

What Would YOU Do?

- Your home economics class is planning a bake sale. You have been appointed as the head of a committee of three to decide what is to be baked. Two of the committee members insist that convenience products be used, such as mixes and frozen and refrigerated doughs. They are sure baked goods can be prepared at a lower cost with convenience products than from scratch.



Chapter 19

Preparing Fruits and Vegetables

To help you to . . .

- Decide how to serve fresh fruits and vegetables.
- Understand how cooking affects fruits and vegetables.
- Select the correct methods for cooking fruits and vegetables.
- Prepare a variety of salads.

Because fruits and vegetables have so many outstanding qualities, they are among the most popular foods in many parts of the world. They are nutritious, colorful, and flavorful. You can serve them at any time of day and in any form you prefer. In many countries—Japan, for example—dessert usually consists only of fruit.

Look for these terms
chlorophyll
flavones

FRUITS

Fruit is a flavorful treat any time. Eat whole fruit for breakfast or drink your favorite juice. In any form, fruit makes an excellent snack. Since most fresh fruit is low in calories, people who watch their weight have a wide selection for nutrition, flavor, and variety.

alifornia Tree Fruit Agreement
resh fruit, either eaten out of hand r as a sauce, makes a nutritious dessert or snack.

Besides eating fruit as is, you can use it in preparing recipes. Fruits such as apples and oranges give their own distinctive flavor to many casseroles. Ethnic recipes often make lavish use of local fruits. Pineapples and bananas, for instance, grow in the tropics. They are common ingredients in main dishes prepared in Hawaii and other tropical countries.

Fruit juices are almost as versatile as fruit. Use them as appetizers, snacks, or as an ingredient in recipes. Frozen fruit juice concentrate, for instance, makes a delicious dessert or pancake sauce. To serve with pancakes, heat it with one or two tablespoons of butter or margarine and serve piping hot. Fruit sauces and cooked fruit make delicious ice cream and cake toppings.

To Serve Fruit Raw

Along with other people, you probably enjoy the succulent flavor of fresh fruit. What is your favorite?

Before eating some fruits such as oranges or mangoes, you must remove the skins. Because the skin and the area under it contain valuable nutrients, remove only as thin a layer of the skin as possible.

Many fruits, such as apples, pears, and peaches, can be eaten with the skin. Before you eat unpeeled fresh fruit, be sure to wash it carefully. Dirt and bacteria clinging to it may cause illness.

Fresh fruit can be eaten as is out of the hand or cut into smaller pieces. Have you noticed that cut fruit turns brown quickly? Most fruits, except for those with a high acid content such as citrus fruit, darken after they are cut. How can you keep the cut surface from darkening? Cover it with lemon, grapefruit,



Fresh fruit should be washed carefully before eating to get rid of dirt and bacteria.

or orange juice. You can also buy an ascorbic acid mixture which prevents darkening.

When you serve cut fruit, select only those in top-quality condition. Bruises or soft or dark spots detract from the appearance and also affect the flavor.

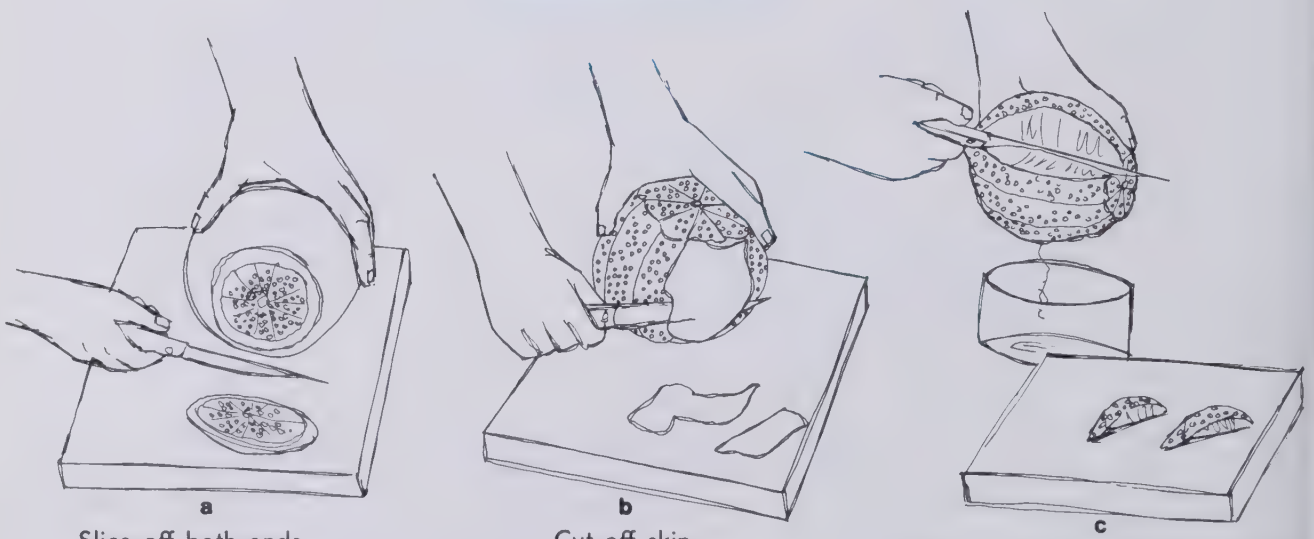
TO COOK FRUIT

Some fresh fruits, such as rhubarb, must be cooked to make them edible. Others, such as apples, can be cooked to give variety to daily food selections.

How does cooking affect fruit? It breaks down the fiber. This not only softens the fruit but makes it easier to digest.

Cooking also affects the nutrients, flavor, texture, and color of fruit. Since vitamin C is de-

To section citrus fruit . .



a
Slice off both ends.

b
Cut off skin.

c
With a sharp knife, loosen sections from membranes.

stroyed by heat and exposure to air, fruits containing this vitamin should be cooked for as short a time as possible.

Fruit flavors usually change slightly by cooking. They become more mellow and less sharp and acid-tasting.

Perhaps you have noticed the color change when fruit is cooked. Strawberries, for instance, become pale pink when baked in a pie.

What happens if fruit is overcooked? It loses nutrients and natural flavor. It also becomes mushy and loses its shape and color.

Fruit can be cooked in liquid, baked, broiled, or fried.

Using Convenience Forms

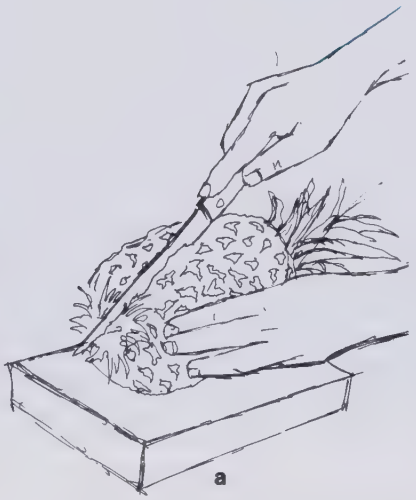
Because fresh fruit is ready to eat, you can consider it as one of nature's convenience foods. However, processed convenience fruits are available to help you add variety to your food choices throughout the year. The most common forms are canned, dried, and frozen.

- *Canned Fruits.* Serve right out of the can with the syrup. Canned fruit can be used wherever fresh, cooked, or frozen fruit is used. For baking, be sure to drain it well so as little syrup remains as possible. This will keep the mixture from having too much liquid.
- *Dried Fruit.* You can eat dried fruit as is, right out of the package. It can also be stewed or used in cooking and baking. Since dried fruits vary in moisture content, follow package directions when cooking in liquid.
- *Frozen Fruits.* Use frozen fruit the same as you would canned or cooked. When completely thawed, frozen fruit tends to be soft and lose its shape. Ice crystals should remain on the fruit when it is served so it holds its shape.

Let's Explore and Report

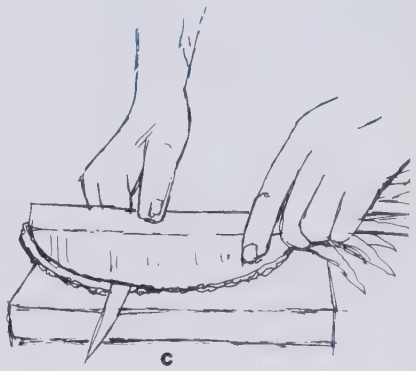
- Look through cookbooks, magazines, and newspapers for

To make a pineapple boat . . .



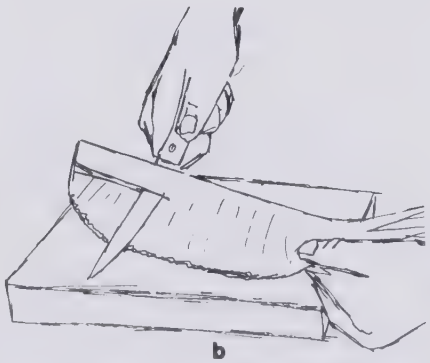
a

Cut a fresh pineapple into lengthwise quarters.



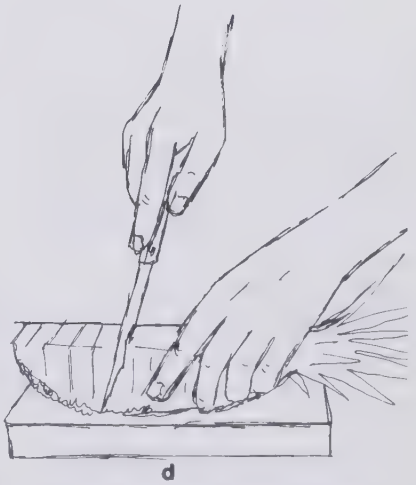
c

With a knife, separate skin from pulp. Do not remove pulp.



b

With a sharp knife, remove center core.



d

Slice pulp and serve in skin.



California Tree Fruit Agreement

Fresh fruit—nature's convenience food. Make a cake layer, frost it with whipped topping, and then top with fresh fruit such as nectarines. For a sauce, dissolve currant jelly with a little fruit juice or water and drizzle over the cake.

recipes for each of the following. Select one in each category to prepare in class. Keep in mind preparation and cooking time, skills and equipment needed, and cost.

Baked whole fruit.

Main dish using fruit or fruit juice.

Low-calorie dessert using fruit.

Give reasons for your selections.

- List the fruits currently in plentiful supply in your area. How would you prepare them to serve as accompaniments to main dishes? What main dish would you serve with each? Make up a display or poster showing some of your ideas.

VEGETABLES

A wide assortment of vegetables is generally available all year. Some can be eaten raw but others must be cooked. Vegetables with tough fibers, for instance, such as green beans, and those containing starch, such as potatoes and plantains, must be cooked.

To Serve Vegetables Raw

You can serve many vegetables raw—salad greens, celery, cucumbers, radishes, tomatoes, peppers, turnips, carrots, cabbage, and cauliflower.

Have you ever been in a vegetable garden or seen pictures of vegetable plants? You may



Thank You Puddings and Pie Fillings

Canned pie fillings have many uses—as sauces over meat, in salads, or as pie fillings.

have noticed that most of the plants were not very tall. As a rule, the edible parts of most vegetables grow in or close to the ground, so they carry dirt and harmful bacteria. Before you eat raw vegetables, scrub them carefully to remove dirt, bacteria, and pesticide residues.

To serve raw vegetables as a snack or party appetizer, cut them into small pieces that can be easily picked up and eaten. Cut them into sticks, rings, wedges, or slices. Arrange them on a plate or small tray. If you keep in mind the colors and shapes as you arrange them, you can combine them into an attractive design. To keep the vegetables crisp, arrange them over crushed ice or put the plates on a bed of ice.

Keep a supply of vegetable snacks on hand at all times. Cut raw vegetables and store them in a covered container in the refrigerator. Add a few ice cubes or a tablespoon or two of cold water to the container to keep the vegetables crisp.

Remember, to taste and look their best and to have the most nutrition, raw vegetables should be served crispy fresh. When they wilt or dry out, they not only lose nutrients but crispness and flavor as well.

To Cook Vegetables

Cooking affects vegetables in several ways. Cooking:

Hellman's/Best Foods Real Mayonnaise

Vegetables, properly cooked, and topped with a dill cream sauce.

Most vegetables grow either on or close to the ground. Be sure to wash all vegetables thoroughly to remove dirt and harmful bacteria.



- Breaks down fiber so the vegetables are easy to chew and digest.
- Cooks starch, making it easy to digest.
- Improves flavor by making it more mild and mellow.
- Changes color. If correct cooking methods are used, the color changes are attractive.
- Can cause a loss in nutrients, unless correct methods are used.

What happens when vegetables are overcooked? They become mushy and lose their shape. They lose nutrients and flavor and undergo unpleasant color changes. Strong-flavored vegetables, such as onions and cabbage, become even stronger.

Vegetables can be cooked in liquid, steamed, baked, fried, creamed, scalloped, or glazed.

TO COOK VEGETABLES IN LIQUID

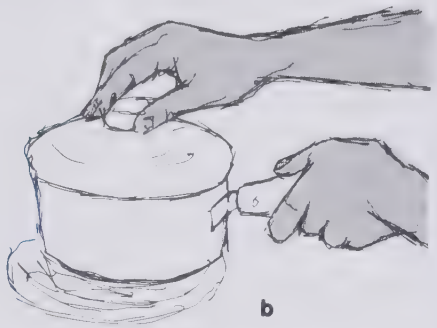
How can you cook vegetables in liquid so they keep their nutrients and attractive appearance? Just use a small amount of water and a pan with a tight-

To cook vegetables properly . . .



a

Use a small amount of water—120 to 240 mℓ [½ to 1 cup] of water for six servings of young, tender vegetables.



b

Use a pan with a tight-fitting cover.



d

Vegetable liquid or pot liquor contains nutrients and flavor. Save it for soups, stews, gravies, and sauces or drink it as a beverage.



c

Test vegetables with a fork for doneness.



e

Serve vegetables hot and with the cooking liquid, if possible.

fitting lid. Cook gently only until tender. Special care must be taken because many of the nutrients are water soluble.

Clean vegetables carefully to remove dirt and bacteria. Dirt left in the vegetables gives a gritty texture.

Exactly how much water should you use? Generally, allow 120 to 240 mℓ [½ to 1 cup] of water for six servings of young, tender vegetables. Mature root vegetables, such as potatoes, must be covered with water. Although water is most commonly used, you can cook vegetables in broth or bouillon.

Cook greens, such as spinach and mustard greens, in only the water clinging to their leaves from washing. Do not add more water. Tomatoes can usually be cooked in their juices but cut them into pieces first so juices flow out. If possible, cook vegetables such as potatoes and beets whole in their skins to retain nutrients and color.

Use a pan with a tight-fitting lid. Add salt to the water, bring to a boil, then add the vegetables. This method helps to pre-

serve nutrients. If the vegetables are put in cold water, they soak longer and lose nutrients. Cover the pan, bring the water to a boil, and then reduce to a simmer. Cook only until vegetables are tender, not mushy.

Salt brings out the flavor of vegetables in cooking. For extra flavor and variety, you can add herbs and spices to the cooking water.

People sometimes use baking soda to shorten cooking time or to retain the green color. Baking soda is an alkali, and alkalies destroy vitamins and flavor in cooked vegetables.

The color of the vegetables can be your clue to cooking times and methods. Vegetables come in four basic colors—green, yellow, white, and red.

- *Green Vegetables.* These vegetables get their color because they contain green pigment, *chlorophyll.* Heat causes the chlorophyll to fade. Overcooked green vegetables lose their bright color and turn a dull brownish green. Cook only until tender but still a bright green.
- *Yellow Vegetables.* Carotene, a source of vitamin A, gives the characteristic color to yellow and orange vegetables, such as sweet potatoes and some types of squash. Heat does not destroy carotene. However, if you overcook the vegetable, the cellular structure breaks down. Carotene escapes into the cooking water and is lost. You can see this happening because the cooking water turns a pale yellow or orange.
- *White Vegetables.* What causes white vegetables, such as cauliflower and cabbage, to darken? They contain *flavones*—pigments which are soluble in water. If the vegetables are overcooked, they turn yellow or dark gray from the action of the flavones in the water.
- *Red Vegetables.* Cooking can have an undesirable effect on the red and purple color in vegetables, such as red cabbage and beets. If the water contains alkalies, the color will change from red to purple and sometimes to a purplish green. Hard water usually has varying amounts of alkalies. How can you prevent this undesirable color change? A small amount of acid, such as vinegar or lemon juice, added to the cooking water will retain the color of red vegetables. Many recipes for beets and red cabbage include an acid not only for flavor but also to keep the bright color. When cooking red vegetables, add a small amount of vinegar or lemon juice to prevent color change. Tomatoes retain their color when cooked because nature has provided them with acid.

What do you do with the cooking liquid after the vegetables have cooked? The liquid or pot liquor contains not only nutrients but flavor as well, so don't throw it down the drain. If you used only a small amount of water to begin with, serve the vegetables in the liquid in a separate dish. Besides adding nutrients, the liquid will keep the vegetables warm throughout the meal. If you cannot use the liquid immediately, freeze it in an ice cube tray. Store the cubes in a plastic container and use them whenever you make soups, gravies, or sauces.

Some vegetables can be cooked in a pressure cooker. This method is best for vegetables requiring a long cooking time, such as lima beans, beets, turnips, whole carrots, and potatoes. Do not use a pressure cooker for vegetables requiring only a short cooking time. An extra minute or two in the pressure cooker can overcook them. The result is loss of nutrients and undesirable changes in color, texture, and flavor.

Perhaps you often wish that cooked vegetables could have a new, different flavor. They can—the secret is in how they are served. Here are some ideas for serving vegetables:

- Serve in their own liquid and add butter, margarine, or bacon drippings.
- To butter, margarine, or bacon drippings, add celery seeds, lemon juice, horseradish, garlic juice, chili sauce, grated lemon or orange rind, prepared mustard, or grated cheese.
- Sprinkle vegetables with slivered toasted almonds, crumbled bacon bits, sliced olives, or chopped hard-cooked eggs.

Using Convenience Forms

Countless varieties of vegetables are available in convenience forms. Each day sees new products brought to the marketplace. Basically, however, convenience vegetables are available in three forms—canned, dried, and frozen.

- *Canned Vegetables.* Commercially canned vegetables need only be heated through. They can be used whenever you



Institute of Texan Cultures
Vegetables such as corn, cooked properly, are flavorful, sweet, and succulent.



Durkee Famous Foods
Canned vegetables such as french fried onion rings can be used as toppings on casseroles.

would use cooked fresh vegetables. Pour vegetable and liquid into a pan. Cover and cook on low heat until just heated through. Serve the vegetables in the liquid since it contains valuable nutrients.

- *Dried Vegetables.* Peas and beans must be soaked before cooking. Soaking helps them cook faster so you use less fuel. Lentils do not need to be soaked; neither do beans and peas if you are making soup. Other dried vegetables, such as potatoes, should be reconstituted according to instructions on the package.
- *Frozen Vegetables.* Cook frozen vegetables by the same methods recommended for fresh. Keep in mind, however, that frozen vegetables have been precooked. Therefore the final cooking time is shorter than for fresh ones. Follow cooking directions on the package.

What To Do with Left-Over Vegetables

Using left-over vegetables can be a problem. As discussed earlier, overcooking changes color, texture, and flavor. You will probably enjoy the vegetables more if you use them in a mixture, such as soup or a casserole, where the changes will not be as noticeable.

Here are some ideas for using left-over vegetables:

- Marinate cold cooked vegetables in a tangy salad dressing and serve as a salad on a bed of lettuce.
- Add to braised or stewed meat a few minutes before serving—just long enough for the vegetables to heat through.
- Make into fritters.
- Put in baking dish, mix with a sauce or condensed canned soup, top with crumbs or grated cheese, and bake only until heated through.

Let's Explore and Report

- Select a recipe for each of the following to prepare in class. Keep in mind preparation and cooking time, skills and equipment needed, and cost.

Vegetable cooked in liquid with herbs.

Main dish using cooked vegetables.

Snack tray to serve with dips. Give reasons for your selections.

- Select your favorite vegetable. Discover as many ways to prepare and serve it as you can. How many of these methods have you tried? Which ones would you like to try?
- Write a newspaper article, giving ideas for adding variety and flavor to daily food choices by using vegetables. Illustrate your article with pictures from magazines and newspapers.

SALADS

What do you think of when you hear the word salad? A small bowl of mixed greens? Pineapple and cottage cheese? Molded gelatin and fruit? Chilled cooked vegetables? These are but a few of thousands of combinations used in salads.

What is a salad? It can be an appetizer or an accompaniment to a main dish. It is made of raw or cooked vegetables and other foods, usually served in a small bowl or on a salad plate. It should be carefully planned so its flavor, color, and texture complement all of the foods in the meal.

With the emphasis on weight control, salads have become popular main-dish foods because they can be low in calories. Main-dish salads are common on luncheon menus in many restaurants. They are larger than appetizer or accompaniment salads. Generally, they include protein for satiety. They can range from a low-calorie dieter's special of tossed greens to a hearty combination of cooked meat, poultry, or fish with cooked vegetables and cheese.

A dessert salad is usually sweet. It is generally a frozen mixture of fruit, cream, and dressing, but it can also be a gelatin salad. You might try serving a dessert salad as a refreshment for a group meeting in your home.

Generally, salads can be divided into four basic kinds—vegetable, fruit, protein, and gelatin:

- *Vegetable Salads.* A vegetable salad can be made of salad greens, other raw vegetables,

and cold cooked vegetables. Many types of lettuce and greens are available. Besides iceberg or head lettuce, use romaine, bibb, leaf, and Boston or butterhead. Other greens, such as endive, dandelion, escarole, chicory, cabbage, watercress, and spinach also add their characteristic flavor. Each has a distinct color, shape, and texture. Try combining several kinds of greens in a tossed salad for a pleasing blend of flavors. Never cut greens—the cut edges turn brown. Instead, tear them into bite-size pieces. Other raw or chilled cooked vegetables can be mixed in with the salad. These include cucumbers, carrots, tomatoes, onions, radishes, celery, cauliflower, and peppers. Each contributes its own color, flavor, and texture.

- *Fruit Salads.* Tangy, refreshing combinations of fresh, frozen, or canned fruits can be used in salads. Rather than serving the salad on a bed of greens, use the shell of a fruit as the container—an avocado half or a pineapple shell. Fruits for salads can be cut into large pieces, slices, quarters, or wedges and arranged attractively on a plate. They may also be cut into smaller pieces and tossed with the dressing and other ingredients such as vegetables and nuts. A frozen fruit salad usually combines fruit with whipped cream, sugar, mayonnaise, and cream cheese. The frozen salad is generally served for dessert, as mentioned earlier. However, as an accompaniment salad it can add richness to a main dish such as roast chicken or turkey.
- *Protein Salads.* Usually, protein salads are served as a main dish, although occasionally they may be used as appetizers. Sliced meat, poultry, or fish can be served with cold cooked vegetables and dressing, attractively arranged on a salad plate. The protein foods can also be cut up into small pieces and mixed with a dressing. You can add ingredients such as diced celery or apples. Hard-cooked eggs, sliced or halved, are an excellent way to add protein to a salad. Remember other sources of protein, such as cheese, cooked beans and pasta, cereals, and nuts.
- *Gelatin Salads.* A gelatin salad combines fruit, vegetables, or protein foods in a flavored liquid thickened with gelatin. Commercially flavored gelatins are sweet and make refreshing dessert salads. For an accompaniment salad, you can make the gelatin less sweet by adding an acid such as vinegar or lemon juice. The combination gives a pleasant, sweet-sour flavor, a delightful accompaniment to almost any meal. You can also make salads by using unflavored gelatin and a flavorful liquid such as fruit or vegetable juice. Never use fresh pineapple in gelatin. It contains enzymes which prevent gelatin from thickening. Cook fresh pineapple before using it in gelatin, or use canned.

To Make a Salad

Salads may be served in bowls, on plates, or in sherbet glasses. Often glass containers are imbedded in crushed ice to keep the salad chilled. The size of the plate or bowl you use depends on the type of salad.

Every salad is made up of three parts—the base, the body, and the dressing.

- *Base.* The base of the salad forms the foundation on which the other ingredients are placed. Usually, lettuce is used for the base. Lettuce cups make an attractive base for many salads. Because the lettuce leaves curve as they grow into a head, they are naturally bowl-shaped and convenient to use. If you prepared a head of lettuce for storing as described on pages 231, 232, the leaves can be easily pulled apart to make cups. Be sure the base of the salad does not hang over the edges of the plate or bowl.
- *Body.* The body is the main part of the salad. It can be vegetables, fruits, protein foods, or a combination of all three.
- *Salad Dressing.* There are three basic kinds of salad dressings—french, mayonnaise, and cooked. *French dressing* is a combination of oil, vinegar, and seasonings. *Mayonnaise* is a rich dressing containing salad oil, egg yolk, vinegar or lemon juice, sugar, and seasonings. *Cooked*

Fresh Spinach Salad

Metric		Ingredients	Customary
Weight	Volume		
285 g	1.9 ℓ	Fresh leaf spinach	1 10-oz. package
240 g	1 medium size	Avocado	1 medium size
60 g	1 small	Bermuda onion	1 small
—	120 mℓ	Sour cream	½ cup
—	15 mℓ	Cider or wine vinegar	1 tablespoon
—	30 mℓ	Mayonnaise	2 tablespoons
—	15 mℓ	Honey	1 tablespoon
Dash	Dash	Salt	Dash
15 g	30 mℓ	Imitation bacon crumbles	2 tablespoons
20 g	30 mℓ	Minced onion	2 tablespoons

Yield: 6 servings. 180 mℓ [¾ cup] dressing.

Wash spinach, remove large stems, and drain completely.

Peel avocado and slice.

Peel onion, slice, and separate into rings.

Place spinach, avocado slices, and onion rings in salad bowl and refrigerate until ready to serve.

Mix together sour cream, vinegar, mayonnaise, honey, salt, bacon crumbles, and onion. Refrigerate until needed.

Pour dressing over spinach salad, toss lightly, and serve.

dressing contains eggs, milk or water, and seasonings, thickened with flour. Many other types are prepared from these basic three. Yogurt, sour cream, whipped cream, and whipped toppings can also be used to make creamy salad dressings.

Which dressing should you use for what type of salad? Although there are no specific rules, here are a few guidelines to help you make selections:

- The dressing should complement and blend with the other flavors in the salad.
- Tart fruits are usually served with a sweet or creamy dressing.
- Delicately flavored foods, such as some vegetables and meats, can be served with a tangy dressing.
- Almost any type of dressing can be used on salad greens, depending on personal preference.

TO ASSEMBLE A SALAD

When you prepare a salad, you have an opportunity to be highly creative. At first, follow recipes exactly. As you gain experience, you will probably think of many combinations for different kinds of salads.

Here are guidelines to help you in assembling salads:

- Be sure all foods are well chilled. If you are making a tuna salad, for instance, refrigerate the can of tuna the day before. A salad should be served chilled, unless the recipe states otherwise. Chilling cuts down on bacteria growth and the possibility of food poisoning. It also retains the nutrients, flavor, and crispness of the foods.
- Wash and drain raw vegetables thoroughly. Water left on vegetables will thin the salad dressing. If the foods are dry, dressing clings to them rather than flowing to the bottom.
- If necessary, prepare foods ahead of time—tear greens and

cut other foods. Store them in covered containers in the refrigerator until needed.

- Arrange the base and then the body. Be as artistic as you can so the colors, shapes, and textures blend. Do not try for unusual arrangements, however. Make the salad attractive but natural looking. Cute animal faces and odd geometric arrangements may appeal to children but have little to offer in adult meal service.
- Add the dressing. Sometimes the dressing is combined with the ingredients before serving, such as in tuna or chicken salad. Otherwise, add the dressing just before serving the salad. If added too early, the dressing will wilt the greens. Spoon dressing over the salad or serve it in a bowl or pitcher so guests can help themselves.
- Prepare salads just before serving and serve them immediately. If you must prepare them ahead of time, assemble them, cover loosely with plastic wrap or foil, and refrigerate.

USING CONVENIENCE FORMS

Many canned and frozen foods such as fruits, vegetables, fish, poultry, and meat can be used in salads. Just open the can, drain the contents well, and arrange with other ingredients.

Prepared salad dressings can save you many hours of preparation time. A wide assortment



Hellmann's/Best Foods Real Mayonnaise

Flavorful and nutritious—raw spinach, avocado slices, and onion rings with sour cream dressing.



Knox Gelatine

Perfection salad, made from unflavored gelatin, vinegar, lemon juice, shredded cabbage, chopped celery, and chopped pimiento.

of dressings is available, from the basic french to rich creamy kinds. Most manufacturers make regular, low-calorie, and special dietary varieties.

Salad dressing mixes, sold in packages, need only be combined with oil, vinegar, and water. These dressings are best made up ahead of time so flavors can blend.

Although manufactured originally for salads, commercial dressings have come into their own as flavorful ingredients in main dishes. You will find a wide range of recipes using salad dressings, from appetizers to main dishes.

Delicatessens and supermarkets offer already-prepared salads such as potato, macaroni, gelatin, and vegetable.

All of these products can save you time and energy. Consider the costs, however, before you decide which to use.

Let's Explore and Report

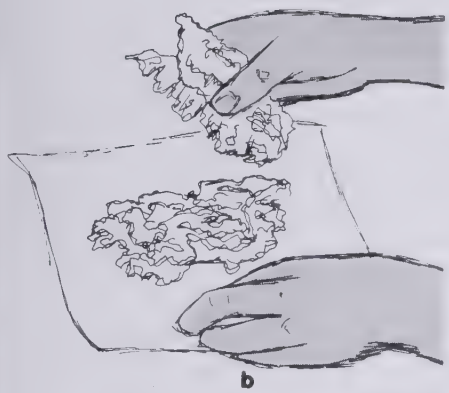
- Make a list of the types of lettuce and salad greens sold in grocery stores in which you shop. Decide how you would use each in a salad. Compare notes with your classmates.
- Make a survey of friends and relatives to determine their favorite fruits and vegetables and favorite methods of preparation. List all, starting with the most popular. Compare with your classmates. What are the five most popular fruits and vegetables? What is the most popular method of preparing each? Give possible reasons.
- Prepare positive and negative charts for cooking vegeta-

Be a salad expert . . .



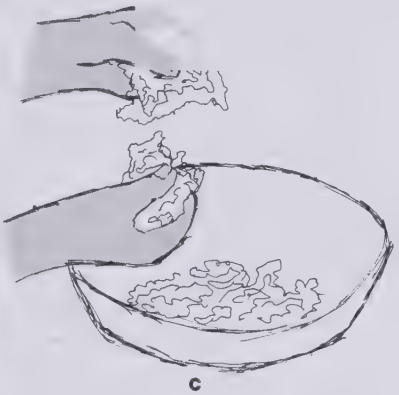
a

Wash greens.



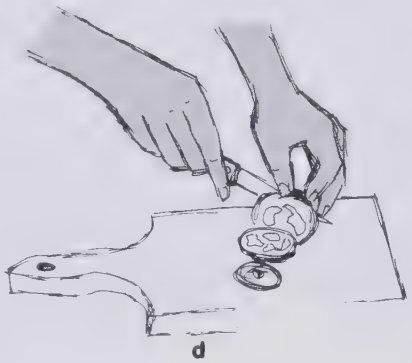
b

Drain greens well.



c

Tear greens into bite-size pieces.



d

Cut other vegetables, such as tomatoes, and combine with greens.



e

Cover salad vegetables in bowl and refrigerate.



f

Just before serving, mix salad with dressing.

bles. On the positive, list correct cooking methods and results. On the negative, list poor cooking methods and results.

What Would YOU Do?

- Your entire family enjoys eating only two vegetables—green beans and corn. They rarely eat other vegetables or salads. However, you have developed a taste for other vegetables and salads and would like to eat them at home, too.



Chapter 20

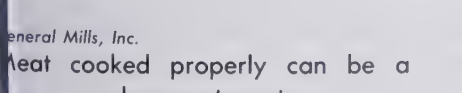
Preparing Meat, Poultry, Fish, and Eggs

To help you to . . .

- **Understand how and why high-protein foods react to different cooking methods.**
- **Identify methods for cooking high-protein foods to retain nutrients.**
- **Use correct cooking methods to bring out the best flavor, color, and texture in high-protein foods.**

What do meat, poultry, fish, and eggs have in common? If your answer was, "They are all high-protein foods," you are right. Because they are high in protein, they have something else in common—they must all be cooked at low temperatures and *only* for specific lengths of time.

Think of some high-protein foods you have eaten recently—fried chicken, grilled hamburger, baked fish, or scrambled eggs. Were they tender, moist, and flavorful? Or were they hard, dry, and tough? The correct cooking methods can make high-protein foods tasty and a pleasure to eat.



eneral Mills, Inc.

Meat cooked properly can be a pleasure to eat.

Look for these terms

brown soup stock
degree of doneness
internal temperature
meat tenderizer
omelet
soufflé
trichinosis
truss
white soup stock

MEAT

Some people enjoy eating raw meat such as Steak Tartare, a highly seasoned raw hamburger sometimes served in gourmet restaurants. Most people, however, prefer to eat cooked meat.

What does cooking do for meat? First of all, it tenderizes meat and brings out the natural flavor. Cooking improves the texture and appearance. As meat browns, it develops a pleasant color and aroma and sometimes a crusty texture on the surface.

During cooking, the protein coagulates or becomes more firm. Fat melts, connective tissue softens, and the meat becomes tender and juicy.

Since meat must often cook for long periods, you may wonder what happens to the nutrients. While heat does not destroy any of the nutrients in meat, those soluble in water may be absorbed by the drippings or the cooking liquid. If



Meat can be tenderized by (A) pounding, (B) scoring, (C) or grinding.

the liquids are eaten as part of the meal in the form of soup, sauce, or gravy, the nutrients are not lost.

While overcooking does not destroy protein, it can make it inedible and impossible for your body to use. If you overcook meat, the juices drip and evaporate. The meat becomes tough and hard. It is not only unappetizing, but also difficult to carve and to digest.

Most people are concerned with the tenderness of cooked meat. Some cuts are naturally tender while others require long cooking times in moist heat to tenderize them.

Besides cooking, meat can also be made tender by one of several methods:

- *Grinding, Pounding, and Cutting.* These mechanical methods tenderize meat by breaking and cutting the fibers and connective tissues. Less tender cuts, for instance, can be ground into hamburger or pounded with a meat tenderizing hammer to make cube steaks. Flank steak is made partially tender by scoring—making rows of shallow cuts about 2.5 cm [1 inch] apart.
- *Acids.* Tomatoes, sour cream, vinegar, and lemon juice are some of the acids used to make meat more tender. Other ingredients, such as oil, herbs, and spices, can be added for flavor. The meat is marinated in the mixture for a certain length of time before cooking. Sometimes the meat is also cooked in an acid mixture.
- *Meat Tenderizer.* You can use commercial meat tenderizers on inexpensive cuts of meat. Meat tenderizer contains a protein-digesting enzyme from plants such as green papayas, figs, and pineapple. Tenderizing can reduce the cooking time for meat by about 25 percent. To use a meat tenderizer, follow the instructions on the package accurately. If misused, the tenderizer can cause the meat to be mushy and crumbly. Some meat processors inject enzymes into animals just before they are slaughtered. The animal's circulatory system distributes the enzyme uniformly. These tenderized meats are usually sold by brand names.

To Cook Meat

You can cook any meat so it is tender, flavorful, and appetizing. The secret is in recognizing the cut of meat and the appropriate cooking method to use.

Tender cuts of meat (see page 207) are usually best cooked in dry heat—roasted, broiled, pan boiled, and panfried.

Less tender cuts of meat must be braised or cooked in liquid at low temperatures for relatively long periods. Moisture, low temperatures, and slow cooking combine to soften the connective tissues and tenderize the meat. Herbs, spices, and vegetables help to flavor the meat and make a delicious sauce or gravy.



Cling Peach Advisory Board

Hamburger—broiled to perfection and served on a bun with lettuce, cheese, tomato, onion, and peach halves.

All variety meats, except liver and some kidneys, are best cooked by the moist heat method.

When you order roast beef, hamburger, or lamb chops in many restaurants, you may be asked, "How do you want it done?" What does that question mean? Beef and lamb roasts, beef steaks, and lamb chops, as well as hamburger, can be cooked to different *degrees of doneness* because of their tenderness. They can be rare, medium, or well done. Rare means that the exterior is cooked and crisp. The inside is just heated and perhaps slightly cooked but has a bright red color for beef and lighter red for lamb. Tastes vary, however—to some people, rare means raw. Well-done meat is cooked completely through-

out. Medium comes halfway between rare and well done—the inside may be just slightly pink.

Although pork is naturally tender, it should be cooked to well done to develop flavor and prevent *trichinosis*—an intestinal illness caused by a parasite which can be in the pork. Cooking to an internal temperature of 60 °C [140° F.] destroys the parasite. Some people broil pork chops, but they should be cooked slowly until the interior is completely done. Bacon, ham, and other processed pork can be broiled because they are partially cooked during processing.

For best results in cooking meat, temperature and timing must be carefully controlled. Two types of temperature are involved:

- *Cooking Temperature.* Whether you use dry or moist heat, high temperatures cause greater shrinkage in meat. They also cause fat to spatter and burn in the oven or on the sides and lid of the pan. This means added cleanup work and time. High temperatures also form a hard crust on the meat, making it difficult to carve and chew. When meat is cooked at lower temperatures, it is more tender, more uniformly cooked, and juicy and flavorful.
- *Internal Temperature.* This is also known as the degree of doneness. As meat cooks, the internal temperature increases. A meat thermometer, inserted in the fleshiest part of the meat, will show you the internal temperature. Cooked to its recommended temperature of doneness, meat is flavorful, tender, and juicy. If cooked beyond that temperature, it becomes dry and tough and shrinks.

Cooking time is important, but it can only serve as an approximate guide as to whether the meat is done. However, when you broil or braise meat, you cannot use a meat thermometer. In that case, you must judge doneness by cooking time.

How can you tell when meat is done if you have no thermometer? Near the end of the cooking time, make a small cut in the thickest part of the meat. You can tell the degree of doneness by the color of the meat and juices flowing from the meat. If the color is red, the meat is rare. If the meat shows no pink or red, it is usually cooked through.

The time meat must cook is determined by:

- *Degree of Doneness Desired.* Meats cooked in liquid should be cooked until well done so they are tender. When cooked in dry heat, however, some meat can be cooked to various degrees of doneness, as discussed earlier in this chapter.
- *Cooking Temperature.* Even a slight change in temperature can affect the cooking time. If you open the broiler door frequently to see how hamburger is cooking, it may take longer to reach the stage of doneness you want. This is because heat escapes and the hamburger cools every time you open the door.
- *Size and Shape of Cut.* As a rule, a large cut will require fewer minutes per kilogram [pound] to cook than a smaller one. If the cut is chunky, however, it will take longer than a flat one that weighs the same.

Should meat be salted before it is cooked? When salt is put on meat, it draws out the juices. This keeps the meat from browning. Therefore do not salt meat to be broiled or pan broiled. When a large roast is salted, the salt does not penetrate more than 1.3 cm [½ inch]. If you put too much salt on the surface, the drippings will probably be too salty.

The most common methods of cooking meat are broiling, roasting, frying, braising, and cooking in liquid.

- *Broiled Meat.* Tender cuts of meat, such as beef steaks, lamb chops, ham slices, liver, bacon, and hamburger, can be broiled. Pork chops are often broiled. However, a moderate temperature should be used so they are well done in the center by the time they are attractively browned on the outside. Steaks and chops should be at least 2 cm [¾ inch] thick while a ham slice should be at least 1.3 cm [½ inch] thick. If you try to broil



General Mills, Inc.
Tender cuts of meat such as steak may be broiled.

thinner pieces, they will dry out before they have browned. Since heat given off by broilers varies, you may have to experiment with the distance of the food from the heat. Time is determined by distance from the heat, thickness of the meat, and doneness desired.

• *Roast Meat.* Roasting is usually used for large, tender cuts of meat. These include loin, rib, and leg roasts. Generally, use lower temperatures for larger roasts and higher temperatures for smaller ones. In food service kitchens, meat is often roasted at temperatures as low as 94 °C [200° F]. Most people, however, do not have the time for such slow roasting methods.

• *Pan Broiled Meat.* Tender cuts of meat which can be broiled can also be pan broiled if they are 2.5 cm [1 inch] or less thick. If the meat is very lean, you may have to brush the pan very lightly with fat.

• *Fried Meat.* Thin pieces of tender meat such as chops, ground and cubed meat, steaks, ham slices, bacon, and liver can be panfried. Deep fat frying may be used for variety meats such as brains, sweetbreads, and liver. The meat is usually coated with egg and crumbs or a batter. Meat mixtures such as ground ham balls can also be deep fat fried.

• *Braised Meat or Cooked in Liquid.* Less tender cuts of meat should be braised or cooked in liquid. Large pieces such as pot roast and Swiss steak are braised. Meat for stewing is generally cut into 2.5 to 5 cm [1 to 2-inch] cubes. If you wish a light-colored stew, do not brown the meat first. Some tender cuts, such as pork chops and steaks, are generally best braised because the longer cooking time allows their flavors to develop. Less tender cuts of meat must often be cooked completely covered with liquid

to make them tender. These cuts include corned beef, heart, tongue, and pig's feet. The broth can be used for cooking vegetables and flavoring sauces.

TO COOK FROZEN MEAT

Frozen meat takes about 50 percent longer to cook than thawed meat. This means, of course, that it uses more fuel in the process. If possible, thaw frozen meat before cooking.

To thaw frozen meat, keep it in the refrigerator as it thaws to prevent harmful bacteria from forming.

To cook frozen roasts, add about one-third to one-half to the cooking time given in the recipe, depending on the size of the cut. Pot roasts cook in approximately the same time, whether thawed or frozen.

If you are broiling frozen meat, place the pan farther from the heat than ordinarily. This gives the inside of the meat time to cook before the outside is done. If you fry frozen meat, brown it on high heat before it has a chance to defrost. Then lower the heat and let the meat cook slowly so it does not overbrown before it is done.

Let's Explore and Report

- Select a less tender cut of meat. Find as many different methods for cooking it as you can. Make up a poster and illustrate with recipes and pictures.
- Visit a local supermarket and list low-quality proteins, such as rice, that can be used to stretch meat. Find a recipe using one of these foods with meat that can be prepared in class.

POULTRY

Poultry includes chicken, turkey, duck, and goose.

Not too long ago, poultry was considered a special-occasion food. Chicken was generally served only on Sundays while birds such as turkey, duck, and goose were reserved for holidays and other events. Today, poultry is a popular high-protein food in the marketplace. People enjoy it for the nutrition and flavor it gives to daily food choices and for its relatively low cost.

Cooked poultry meat is either white, brown, or gray. The fat is soft and light yellow in color. As a rule, fat in poultry occurs just under the skin instead of distributed throughout the meat. For this reason, people who are weight conscious often remove the skin before cooking or eating poultry since a high number of calories are concentrated in the fat.

How do you know which cooking method to use for poultry? You can tell by the age of the bird. Use dry-heat methods for young birds. Mature, less tender birds should be braised, stewed, or used in soup.

As with meat, poultry must be cooked at moderate or low temperatures just until done. High temperatures and too long a cooking time dry out and toughen the flesh. To test poultry for doneness, move the drumstick gently. It should twist easily in the thigh joint. The breast meat near the shoulder joint should be easy to pierce with a fork. All poultry should be cooked until well done but it should not be overcooked.

Does pink coloring in cooked poultry mean it is not done? No. The color is a chemical reaction caused by gases in the oven combining with substances in the poultry. It happens in both gas and electric ovens. Even though the meat is pink, it is safe to eat.

Sometimes the bones in cooked poultry turn a dark color. During freezing and thawing, blood cells in the bones break down. Cooking turns the red blood to brown. However, the color has no effect on the flavor.

Poultry can be cooked by broiling, roasting, frying, braising, and cooking in liquid.

- *Broiled Poultry.* Very young chickens, 0.5 to 0.7 kg [1 to 2½ pounds] and turkeys, 1.8 to 2.7 kg [4 to 6 pounds] may be broiled. They can be split in half lengthwise or cut into quarters. When you cut them into quarters, you separate them into light and dark meat sections. This makes them easier to serve because many people tend to prefer one color over the other. Total broiling time will vary with the size of the bird. Chicken will



Pacific Kitchen for Pacific Coast Canned Pear Service

Roast stuffed turkey garnished with orange slices, pear halves, and cranberry sauce.

broil in about 40 minutes while turkey will take from 80 to 90 minutes.

• *Roast Poultry.* Tender chicken, turkey, duck, and goose may be roasted. You can roast it with or without stuffing. If you plan to stuff the bird, be sure to do so just before roasting. If you stuff it too far ahead of time, harmful bacteria will grow in the stuffing. Prepare about 240 mℓ [one cup] of stuffing for each 0.45 kg [pound] of poultry. If any is left, put it in a greased casserole, cover, and bake with the bird only until done. If you do not use stuffing, season the cavity as desired with salt, pepper, herbs, and spices. You may insert aromatic vegetables such as carrots, parsley, onions, and celery to flavor the meat. Before you roast the bird, you should truss it. To *truss* means to bind the legs and wings to make the bird compact, easier to handle, easier to cook, and more attractive to serve.

• *Fried Poultry.* Chicken and turkey may be either panfried or oven fried. When panfrying, cook the poultry slowly so the outside does not overcook before the inside is done. Chicken will cook in 10 to 30 minutes and turkey in 45 to 60 minutes, depending on the size of the pieces. Small or thin pieces will be done faster than the larger ones. Remove pieces as they are



National Marine Fisheries Service
Shrimp with green beans, Cantonese style, in a soy sauce.

done and keep them warm in the oven. The size of the pieces will also determine cooking time for oven fried chicken or turkey. Chicken pieces will generally bake in about 50 minutes. A young tender turkey, under 3.6 kg [8 pounds], will take about 1½ hours.

• *Poultry Cooked in Liquid.* When stewed, chicken is combined with other ingredients to make a flavorful sauce. Stewed chicken is common in many ethnic recipes, such as Arroz Con Pollo (Chicken with Rice), popular in Spain and Mexico. If you need cooked pieces of chicken for a recipe, such as salad or creamed chicken, boil the chicken. This method has several advantages over roasting or broiling. You can use a stewing hen, which costs less than a younger bird. Boiling also gives a light-colored meat which does not have a chewy crust. Cooking time will vary, depending on the size and age of the hen. The liquid in which the hen cooked can be used to make soup, as discussed on pages 364, 365.

Let's Explore and Report

• Search for the following recipes to use in class. Keep in mind preparation and cooking time, skills and equipment needed, and cost.

Oven-baked turkey pieces.

Braised or stewed chicken.

Make up a menu for each.

• Visit a local supermarket and make a list of the kinds of poultry sold. Make up a poultry chart, listing the kinds sold, and indicating the cooking method best for each.

FISH AND SHELLFISH

Seafood is ideal for busy people who want nutritious meals they can prepare easily and quickly. Fish and shellfish have no connective tissue, so for the most part they are extremely tender. Because they are high-protein foods, they must be cooked at low temperatures and only until done. All of this adds up to a nutritious food that cooks in a relatively short time.

To Cook Fish

What is the best method for cooking fish? Dry heat meth-

ods—broiling, baking, and panfrying—are favored because they bring out the natural fish flavor. Although moist heat methods are not needed to make fish tender, you can use them to add variety to your meals.

Be sure to cook fish until completely done, but be careful not to overcook it. If fish is not completely cooked, it is unpleasant to eat. It may also be unsafe since it may be contaminated with harmful bacteria and parasites. If fish is overcooked, the protein toughens and becomes rubbery. Some fish can also become mushy.

How can you tell when fish is cooked just right? It is firm and flakes easily. You can also judge white-colored fish by the color. Uncooked white fish is translucent. When cooked, it turns an opaque white.

Fish may be baked, broiled, fried, steamed, or poached.

- *Baked Fish.* Whole fish, steaks, or fillets can be baked. To keep them moist and flavorful, they are usually baked in a sauce or with a crumb topping, or brushed with melted butter or margarine. Whole fish can be stuffed for baking. Fillets, too, can be stuffed by spreading them with dressing and then rolling them up.
- *Broiled Fish.* Fish for broiling should be at least 2.5 cm [1 inch] thick. Usually, fish steaks, large fillets, and whole fish can be broiled. Thicker cuts should be farther from the heat than thin ones. Small pieces, such as fillets, do not need to be turned. Thicker pieces, such as steaks, should be turned halfway during the cooking period.
- *Panfried Fish.* This method is excellent for small whole fish, fillets, and steaks. Usually, the fish is breaded, then fried until brown.
- *Oven Fried Fish.* Fish for oven frying is usually cut into serving-size portions. It is dipped in salted milk and coated with toasted, fine dry crumbs. Oven frying has an advantage over panfrying in that you do not have to turn or baste the fish. Contrary to general rules for cooking protein, fish is oven fried at 260 °C [500° F.]. The breading protects the fish from the high temperature. The combination of the crumb coating and the high temperature gives an attractive, brown crust and prevents the escape of flavorful juices.
- *Deep-Fat Fried Fish.* Fish should be deep-fat fried at 177 °C [350° F.]. If the temperature is higher, the outside will brown before the center is cooked. Too low a temperature will result in pale, greasy, fat-soaked fish. The fish may be breaded or dipped in batter. Either method makes it moist and crisp.
- *Poached Fish.* Fish can be poached in salted water, in water seasoned with spices or herbs, or in milk. Because the liquid contains flavorful juices, you can cook it down and thicken it to make a sauce for the fish. Poached fish is easy to prepare and can be used in many ways. You can serve it with a sauce or use it as the main ingredient in a casserole. Chill and flake poached fish for a salad.
- *Steamed Fish.* Use either plain salted water for steaming or season it with herbs and spices. Serve fish hot with a sauce or use as an ingredient in a recipe such as a casserole or a salad.

To Cook Shellfish

Shellfish, just as fin fish, is naturally tender and needs to be cooked for only a short time at moderate temperatures. Shrimp may be simmered, baked, broiled, panfried, or oven fried. Lobsters and crabs may be simmered, baked, or broiled. Clams and oysters may be steamed, baked, or sautéed.

To Serve Fish

Some fish, such as haddock or perch, have little, if any, color. In that case, plan the menu so the other foods are colorful.

Garnishes, either fruits or vegetables, can be used to add color to a fish dish. You can use cooked or spiced beets; cucumber slices; lemon, lime, or or-



American Egg Board
A cheese omelet, garnished with spiced crabapples.

ange slices, wedges, or twists; chopped nuts; or a sprinkling of paprika, chives, or dill.

Let's Explore and Report

- Make a survey of friends and relatives to find out their favorite fish and most common method of cooking. Prepare a five-minute talk, explaining to your friends and relatives how they can enjoy the fish even more by using different methods to prepare it.
- Select a recipe for each of the following that can be prepared in class. Keep in mind preparation and cooking time, equipment and skills needed, and cost.

Baked stuffed fish, whole or fillets.

Poached fish with a sauce.

EGGS

Eggs are one of nature's most versatile foods. Not only are they cooked and eaten as main dishes and snacks, but they are also used as ingredients in many recipes.

To Cook Eggs

When you cook eggs, keep in mind that they are high-protein foods. This means high temperatures or overcooking will toughen them. Cook eggs at low temperatures only until done.

Eggs can be cooked in the shell, fried, scrambled, baked, or poached.

TO COOK EGGS IN THE SHELL

Never boil eggs—they will be tough and rubbery. Simmer them gently or bring to a boil and allow to stand in hot water until done.

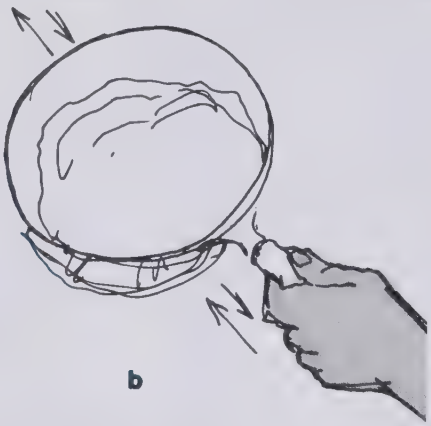
You can cook eggs in the shell to whatever stage of doneness you like, from very soft to hard. As soon as the cooking time is up, plunge the eggs in cold water for a short time to stop the cooking process. If you do not, the eggs will continue to cook, even though you have removed them from the hot water.

Have you ever eaten hard-cooked eggs with a dark coating on the yolk? The gray-green discoloration is caused by overcooking. When eggs are overcooked, a chemical reaction takes place between the iron in the yolk and the hydrogen sulfide in the white. They combine to make another chemical, fer-

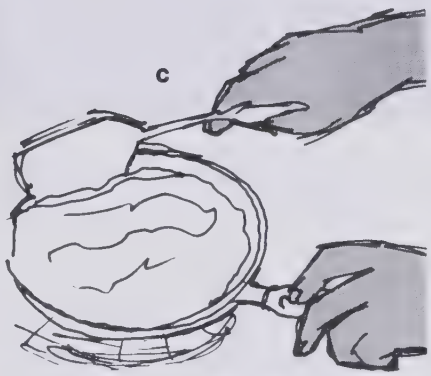
To make an omelet . . .



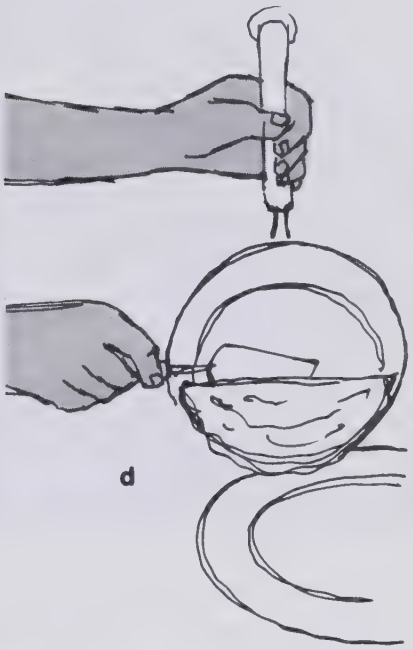
Mix eggs according to recipe.



Cook egg mixture slowly, shaking pan to be sure mixture does not stick.



Run spatula under eggs to allow uncooked mixture to flow to bottom.



Fold omelet in half and turn out on serving dish.

rous sulfide, which forms a dark gray-green, harmless deposit around the yolk. The egg is safe to eat, but the discoloration detracts from its appearance, especially if you are serving slices as a garnish or in a salad.

How can you keep the yolk from discoloring? As soon as the eggs are hard-cooked, pour off the hot water and cover them with cold water. Keep them in the cold water until they have cooled. This keeps them from overcooking and prevents the chemical reaction from taking place.

Cooling hard-cooked eggs in water also makes them easier to peel. To peel a hard-cooked egg, tap the shell gently all over. Roll the egg between your hands to loosen the shell. Then peel, starting at the large end. Hold the egg under running cold water or dip it in a bowl of cold water to help ease off the shell.

OMELETS

A plain or French *omelet* is prepared from the same ingredients as scrambled eggs. However, because of the technique used in cooking, it holds together in the form of a thick but light pancake. The beaten eggs

Kraft Foods

Scrambled eggs and green peppers on toasted English muffins and topped with broiled sausage.

Beaten egg whites . . .



Foamy.



Soft peaks.



Stiff peaks.

can be cooked in an omelet pan—a frypan with rounded sides. When cooking, the mixture is lifted occasionally to allow uncooked egg to flow under. It is never mixed. Making a good omelet takes skill, practice, and patience. Good organization is essential since it takes only about two minutes to cook a plain omelet. This means you must have all the ingredients on hand and pre-prepared. When done, the omelet is folded in half. A filling such as grated cheese or a spicy sauce may be put over the omelet before it is folded. A fluffy omelet is made by separating the eggs and beating the egg whites. The mixture is baked in the oven.

To Use Eggs as Ingredients

Eggs add nutrients, flavor, richness, tenderness, and color to food combinations. They also perform other important functions. For example, eggs can be used to thicken foods, to leaven baked products, as foams or meringues, and to bind and emulsify foods.

EGGS THICKEN FOODS

When eggs are cooked they thicken, so they are often used to thicken foods such as custards, puddings, pie fillings, and sauces. Generally, two egg yolks have the same thickening power as one whole egg. This is a practical way to use leftover raw egg yolks.

When you thicken foods with eggs, be careful not to overcook them. If the mixture is cooked at too high a temperature or for too long a time, the protein shrinks and separates from the liquid or curdles. Once an egg mixture curdles, it cannot be made smooth again.

To prevent curdling, be careful when combining eggs with a hot liquid. Break the eggs into a bowl and beat. Stir a little of the hot liquid into the eggs to warm them. Then stir the eggs into the remaining hot liquid, a little at a time, stirring constantly.

You can keep egg mixtures from overcooking on top of the range by using a double boiler. Keep the water in the lower pan just below boiling. When you bake a custard or other dish thickened with eggs, set the baking dish in a pan of hot water in the oven. It helps keep the mixture from curdling.

Frequently, sauces, puddings, and fillings use starch as well as eggs for thickening. Starch must cook longer than eggs. Therefore combine the starch with the liquid first and cook thoroughly. Then add the egg.

EGG WHITES LEAVEN FOOD

Egg whites are used to leaven baked products, such as angel food cake, sponge cake, fluffy omelet, and soufflé. A *soufflé* is a mixture of beaten egg whites and yolks and cream sauce, with other foods added for flavor. Cheese soufflé is the most popular while chocolate soufflé makes an elegant dessert. The mixture is baked in a soufflé dish, which has high straight sides so the soufflé can rise. As soon as it is baked, the soufflé should be served immediately. When it is removed from the oven and cools, it begins to lose volume and falls. Never let a soufflé wait for you. It is better to time the meal so *you* wait for it.

To be used as leavening, egg whites must be beaten. Eggs beat to their maximum volume at room temperature. Therefore let the egg whites stand for a few minutes in the bowl until they reach room temperature. The easiest way to beat egg whites is with an electric mixer. However, you can also do the job with an egg beater or a wire whip. As you beat air into them, the whites change in texture and color. Instead of being thick, colorless, and transparent, they become fluffy, white, and opaque.

Egg whites can be beaten to any consistency as specified in the recipe. The three most common are foamy, soft peaks, and stiff peaks.

- *Foamy Whites.* The air is just beginning to mix into the whites. Bubbles and foam begin to form on top but the whites are still fairly transparent.
- *Soft Peaks.* The mixture is white and shiny and has reached full volume. When you remove the beaters, the whites

Cheese Soufflé

Metric		Ingredients	Customary
Weight	**Volume**		
15 g	30 mℓ	Grated Parmesan cheese	2 tablespoons
55 g	60 mℓ	Butter or margarine	¼ cup
30 g	60 mℓ	All-purpose flour	¼ cup
1 g	1 mℓ	Salt	¼ teaspoon
Dash	Dash	Cayenne pepper	Dash
1 g	1 mℓ	Dry mustard	¼ teaspoon
—	240 mℓ	Milk	1 cup
230 g	480 mℓ	Shredded Cheddar cheese	2 cups (8 oz.)
25 g	60 mℓ	Grated Parmesan cheese	¼ cup
5	5	Egg yolks, slightly beaten	5
5	5	Egg whites	5

Temperature: 177 °C [350° F.]
Yield: 6 servings
Baking pan: 2.8 ℓ [3-quart] soufflé dish or casserole
Preheat oven to 177 °C [350° F.]
Sprinkle the 15 g or 30 mℓ [2 tablespoons] grated Parmesan cheese in a 2.8 ℓ [3-quart] greased soufflé dish or casserole so bottom and sides are coated evenly. Remove any excess.
Melt butter or margarine in a saucepan.
Add gradually the flour, salt, cayenne pepper, and dry mustard.
Stir, making a smooth paste.
Remove from heat.
Stir in milk gradually and cook until mixture bubbles, stirring constantly.
Cook for about 1 minute, stirring constantly.
Remove from heat.
Stir in gradually Cheddar cheese and remaining 25 g or 60 mℓ [¼ cup] Parmesan cheese until melted. If necessary, return to low heat to finish melting cheeses, but do not boil.
Blend a little of the hot mixture into the slightly beaten egg yolks.
Return yolk mixture to saucepan gradually, mixing well.
Beat egg whites until stiff but not dry.
Fold cheese sauce into egg whites.
Turn into soufflé dish or casserole.
Bake at 177 °C [350° F.] for 40–45 minutes.
Serve immediately. Soufflé will begin to fall as it cools.

stand up in peaks that bend over.

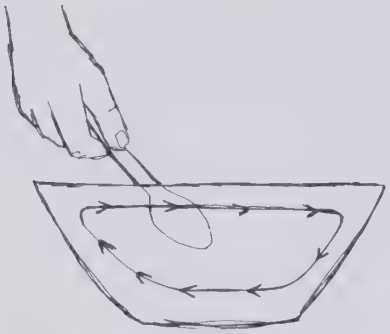
- *Stiff Peaks.* The mixture is white and shiny and is still at full volume. When the beaters are removed, the peaks stand up straight. This is the maximum point to which egg whites can be beaten. Beyond this, they become overbeaten and dry and break into pieces. As a result, the product will not rise well.

To combine beaten whites with other ingredients, use a folding motion. This means cutting into the mixture with the edge of the spoon, down through the mixture, up the op-



United Dairy Industry Assoc.

A soufflé begins to lose volume as soon as it is removed from the oven. Never let a soufflé wait for you. Time the meal so you wait for the soufflé.



When folding, cut into the mixture with the edge of a spoon, down through the mixture, up the opposite side, and then across through the top. Never lift the spoon out of the mixture—air will be lost.

posite side, and then across through the top of the mixture. Never lift the spoon out of the mixture—every time you do, you will lose air and volume. Repeat the folding motion until the mixture is well blended.

MERINGUES

Besides serving as a leavening, beaten egg whites can be made into meringues. Sugar and flavoring are beaten into the egg whites to make the meringue. There are two types of meringues, soft and hard.

- *Soft Meringues.* The most popular use for soft meringue is topping for baked desserts such as Lemon Cream Pie or Baked Alaska. When you spread meringue on a pie, be sure it covers the edge of the pastry. This will seal and hold it so it does not shrink as it bakes. The meringue should be placed on hot filling. Otherwise it may weep—a layer of liquid will form between the meringue and filling.
- *Hard Meringues.* You can use hard meringues in cookies or to make a dessert shell. The shells are baked at low temperatures so they dry out without browning. Fill them just as you would a pastry shell.

OTHER USES FOR EGGS

Eggs serve as emulsifying agents to keep ingredients from separating. Cake batter depends on eggs to keep the fat and liquid from separating. Eggs keep the oil and vinegar in mayonnaise mixed together.

Mixtures such as meat loaf hold their shape because eggs are used as a binding. When the food is cooked, the egg protein thickens and helps the food hold its shape. Foods to be fried, such as fish or chicken, are often dipped in beaten eggs and then in crumbs. The eggs bind the crumbs to the food.

Let's Explore and Report

- Select recipes to prepare in class for the following. Consider preparation and cooking time, skills and equipment needed, and cost.

  Baked eggs in a sauce.

  Soufflé.

  Main dish using eggs.

- Prepare two hard-cooked eggs. Remove from hot water. Place one immediately in cold water to cool. Let the other cool at room temperature. Use the eggs for a snack or sandwich, or slice them for a salad. How did the two eggs differ? Was there any difference in flavor? Which did you prefer? Why?

SOUP

Soup can be served in hundreds of ways—hot, chilled, thin and low-caloried, thick and filling, or creamed. If you serve the plain liquid, you are serving broth. If you add vegetables, cooked cereal or pasta, and cooked meat or fish, you have a hearty one-dish meal.

Most soups are made from stock—the seasoned liquid in which meat, poultry, fish or vegetables have cooked. Stock can also be used as the basis for gravies, sauces, and casseroles. Food service kitchens make up stock in quantity and keep a supply on hand, since it is used in so many different recipes. However, if the stock is not properly stored, harmful bacteria can thrive in it. If you make up a quantity, store it in the refrigerator and use within two days. If you plan to keep it longer, freeze it. If you need broth for a recipe, it is easier and more convenient to use either canned broth or bouillon cubes.

You can prepare either brown or white soup stock.

- *Brown Soup Stock.* Because it is made from beef meat and bones, the stock has a rich color. To make it even darker, brown the meat and bones before cooking. Brown soup stock has a hearty, robust flavor.

• *White Soup Stock.* The stock is made from light-colored meats such as veal and chicken. White soup stock is generally light and mild in flavor. Mutton can also be used, but the stock will have the characteristic lamb flavor.

Less tender cuts of meat, such as beef shanks, are used to make stock. These cuts have a well-developed flavor. Bones are also essential in making soup, especially those with marrow. They give nutrients and flavor to the soup.



West Bend

Beef and vegetable soup—a hearty one-dish meal.

USING CONVENIENCE FORMS

High-protein foods and soups are available in many forms of convenience foods. Many of these can save you time and money. Some, however, may cost you more than making the recipe yourself.

• *Canned.* Many types of meats, fish, and poultry can be purchased canned, ready to use. These products are convenient as main dishes or in preparing recipes such as casseroles and salads. A wide assortment of canned soups can be served by merely adding water and heating. They are flavorful and can also be used in preparing recipes, such as casseroles. Canned main dish foods, such as beef and gravy, chili, and chicken and noodles, only need to be heated.

• *Packaged.* Packaged dinners can include ingredients for a complete main dish or merely provide the foundation for one. Read the label carefully. Often protein, such as meat or chicken, must be added to the ingredients in the package. Packaged dried soups reconstitute easily and can also be used as ingredients in recipes for dips and main dishes.

• *Frozen.* Freezing makes possible a wide array of ready-to-cook fish that might not otherwise be available in many areas of the country. Some are breaded, although most are not. Prepared fish dishes, frozen and ready to heat, are also available. Frozen meat and poultry entrées can be quickly heated for a quick meal.

Let's Explore and Report

• Select a recipe using either a dehydrated or canned soup as part of a main dish with fish or poultry.

• Make up a poster showing the basic principles for cooking all high-protein foods.

• Survey friends and relatives to find their favorite ways to prepare turkey, chicken, and duck. Compare with your classmates. What was the most popular method for each?

• What is your favorite poultry? Find three different methods for preparing it. Make up a menu for each recipe.

What Would YOU Do?

• You will be living alone for a week and must prepare your own meals. You have a refrigerator with a small frozen food storage compartment but you do not have a freezer. You are accustomed to having a protein main dish for dinner every day.



Chapter 21
Preserving Food at Home

To help you to . . .

- **Determine when you can save money and time by preserving food at home.**
- **Understand why exact methods must be used for canning and freezing food.**
- **Follow correct procedures in freezing and canning fresh fruits and vegetables.**

Why do many people freeze and can food in quantity when supermarkets have such an abundant supply? Economy and convenience are probably the main reasons. As the world demand for food increases, some foods are in short supply. Inflation causes food prices to skyrocket. To offset shortages and high prices, many people preserve food at home. To preserve means either to can or freeze food for future use.

Look for these terms
canning
cleanliness
freezing

f processed properly, home-canned oods can be flavorful and nutritious.

SHOULD YOU PRESERVE FOOD?

Most people think canning and freezing food will save them money. Preserving food at home, however, does not always guarantee economical results. By the time you add up the costs of the produce, containers, and other equipment, you may find that each container of home-preserved food costs as much or more than one prepared commercially.

If you plant a vegetable garden and preserve the food, you can usually save money.

If you have to buy the produce and economy is your main goal, check prices carefully. Special prices on large purchases of fruits or vegetables could help you save money. Stores sometimes have late-summer sales on fruits and vegetables in abundant supply.

Do you have enough canning or freezing supplies? If you are just starting out, for instance, you will need more for canning than just jars and lids. You will need a hot water bath canner for processing fruit and a pressure canner for vegetables. These two items can make your first project a costly one.

FIRST STEPS TO FREEZING OR CANNING

Freezing preserves food at a temperature of −18 °C [0° F.] or below. In *canning*, food is processed at a boiling temperature of 100 °C [212° F.] or above. Freezing is easier and faster but you must have a reliable freezer. Canning is more time-consuming and requires special equipment.

Whichever method you select, be sure to follow tested recipes exactly for successful



Tanner Orchards, Peoria, Ill.

When fresh fruits and vegetables are at their peak supply, farmers often sell the produce direct to consumers.

results. If you take shortcuts—if you skip even one small step—you may find you have nothing but spoiled food and wasted time and money. If you eat the spoiled food, you may become ill!

At this point, you may want to review the section on what causes food to spoil, pages 223, 224, and 273–275.

Foods are generally best preserved when they are plentiful, at their peak of quality, and low in price. This is usually in mid and late summer.

Several weeks before buying the produce, make a list of the kinds and amounts you want to preserve.

Check your supplies, such as containers, lids, and labels. Be sure they are in usable condition. If necessary, buy new ones.

When you preserve food, be sure you practice *cleanliness* as you work. Keep yourself, the equipment, and the working areas as clean as possible. Have an ample supply of towels handy so you can use fresh, clean ones as they are needed. Paper towels are convenient.

Let's Explore and Report

- Compare prices for buying 11.4 ℓ [12 quarts] of canned tomatoes and canning 11.4 ℓ [12 quarts] at home. Assume you have grown the tomatoes yourself but must buy new jars and lids, as well as a hot water bath canner. Add the cost of the plants and fertilizer. Make the same comparison, but assume you must buy the tomatoes.
- Make a list of locally grown fruits and vegetables that can be preserved at home. Describe the qualities to look for when purchasing these foods.

TO FREEZE FRESH FRUITS AND VEGETABLES

Look for these terms
blanch
vapor-moisture-proof

Fresh fruits and vegetables should freeze as quickly as possible. If they freeze too slowly, large ice crystals form, damaging the texture. This is why frozen fruits and vegetables often become mushy when thawed.

Containers

Fruits and vegetables must be packaged in vapor-moisture-proof containers. These protect the foods from drying and losing nutrients, flavor, and texture. What kind of containers are vapor-moisture-proof? Those made of rigid plastic or plastic-coated cardboard and with tight-fitting lids. *Heavy-duty* plastic bags may also be used for freezing.

Do not use thin plastic refrigerator storage bags or cartons from cottage cheese, ice cream, or milk. Because they are not moisture-vapor-resistant, foods will dry out.

Since food must be frozen quickly, use small containers so cold will reach the center area faster.

To Freeze Food

Since the food should be frozen as quickly as possible, work with small quantities at a time.

Most fruits and vegetables can be frozen. However, tomatoes and crisp foods such as green onions, salad greens, celery, and radishes lose their texture. Citrus fruits do not freeze well but the juices do.

Before fruits and vegetables are frozen, the enzyme action must be stopped. To do this, use sugar, sugar syrup, or ascorbic acid on fruits. Vegetables must be *blanched* or slightly precooked to stop the enzyme action.

To Pack, Seal, and Label

Allow 2.5 cm [1 inch] of head space between the top level of the food and the lid of the container. This gives food room to expand as it freezes.

If fruit is packed in liquid, place a small piece of crumpled waxed paper or foil on top of the fruit to keep it under the liquid.

Seal containers and bags securely according to manufacturer's instructions.

Label each package with the date, contents, and amount. Add the foods to your freezer inventory list. See page 227.

To Load the Freezer

Freeze foods as soon as they are packed. For fast freezing, place packages against the coldest coils or wall of the freezer. Leave space between packages. Never try to freeze food on the door of an upright freezer since that area is generally warmer than the rest of the freezer.

In about 24 hours, when the food has frozen, restack the packages close together to save space. If possible, stack the same kinds of food together so you can locate them easily.

Storage Time

How long will home-frozen fruits and vegetables keep in the freezer? That depends on the original quality and the care used in preparing them. Ordinarily, they can be stored in the freezer at −18 °C [0° F.] for 8 to 12 months.



Fresh-picked vegetables, such as green beans, should be preserved as quickly as possible so they do not lose quality.

Let's Explore and Report

- Visit a supermarket, hardware store, and housewares section in a department store, or use catalogs from several mail order stores. Make a list of the different kinds of freezer containers available and their cost. Which would you prefer? Why?

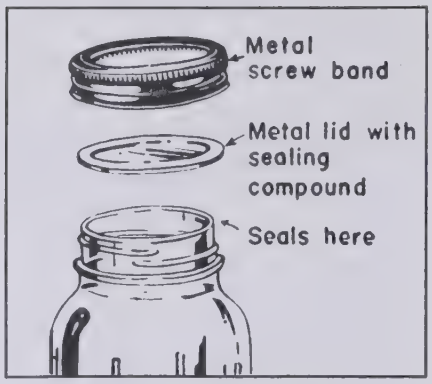
TO CAN FRESH FRUITS AND VEGETABLES

Look for these terms

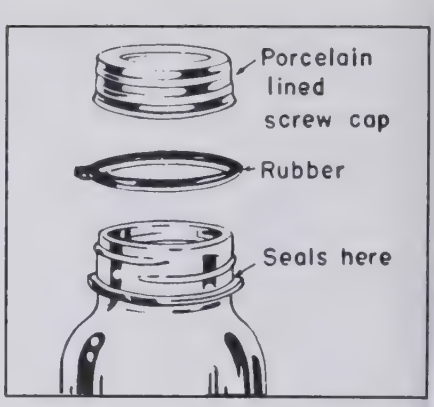
botulism
fermentation
flat-sour
high-acid foods
hot pack method
hot water bath method
low-acid foods
open kettle method
raw pack method
steam pressure method



Be sure jars are free from nicks, cracks, or sharp edges along the rim. Damaged jars will not seal properly.



Two-piece metal lid.



One-piece metal lid with porcelain lining.

USDA

Two types of jar lids are available.

Fresh fruits and vegetables are the most common foods canned in the home. Therefore this discussion will be limited to these foods. However, meats, fish, and poultry may also be canned, using the pressure canner method for low-acid foods described later in this chapter.

Home canning involves several basic steps. The food must be packed into jars. Then it is heated at a high-enough temperature for a long-enough time to kill microorganisms and enzymes. After processing, the jars must be sealed tight so new microorganisms cannot get in and liquids cannot get out. If the jars are not processed properly, microorganisms grow and spoil the food. These are the same types of microorganisms which cause food spoilage—bacteria, yeast, and molds—as discussed in Chapter 12. In canned food, molds cause fuzzy patches on the food. Yeasts cause food to ferment so the liquid spurts out when the jar is opened. Bacteria sometimes give canned food an odd flavor, called *flat sour*. They also cause food to become slimy and soft.

Jars and Lids

Jars and lids for canning must be in perfect condition. Using damaged jars and lids will cause food spoilage.

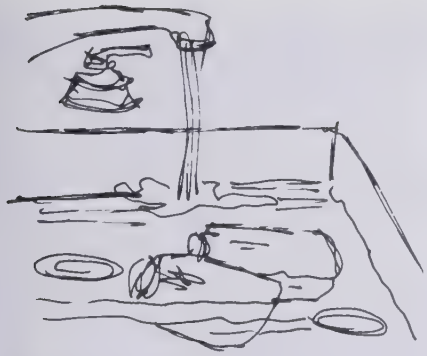
Never use jars from commercial products, such as mayonnaise, jelly, or peanut butter, for home canning. They cannot be properly processed and sealed. Food poisoning can result.

Mason jars with screw-on lids are made especially for home canning. They are available in 240 mℓ, 480 mℓ, 720 mℓ, and 0.95 ℓ [½-pint, pint, 1½-pint, and 1 quart] sizes. The size you use depends on the size of the food. It also depends on how much you and others will eat reasonably soon after opening the jar.

Canning jars may be reused if they are free from nicks, cracks, or sharp edges along the top rim. Defects can prevent the jar from sealing properly, causing food to spoil.

Two types of lids are available:

- *One-piece metal lid.* Has a porcelain lining inside the top. Must be used with a rubber ring which acts as a seal. The ring fits on the shoulder about 2.5 cm [1 inch] below the top of the jar. May be reused if in good condition.
- *Two-piece metal lid.* Consists of a flat metal lid and a screw-on sealing band. The lid has a rubber compound on the inside that fits against the top of the jar. Sealing bands may be



Wash jars and lids in hot sudsy water. Rinse well. Keep in clean, hot water until ready to use.

reused if they are not rusty. Flat lids must be replaced each time.

Packing Food

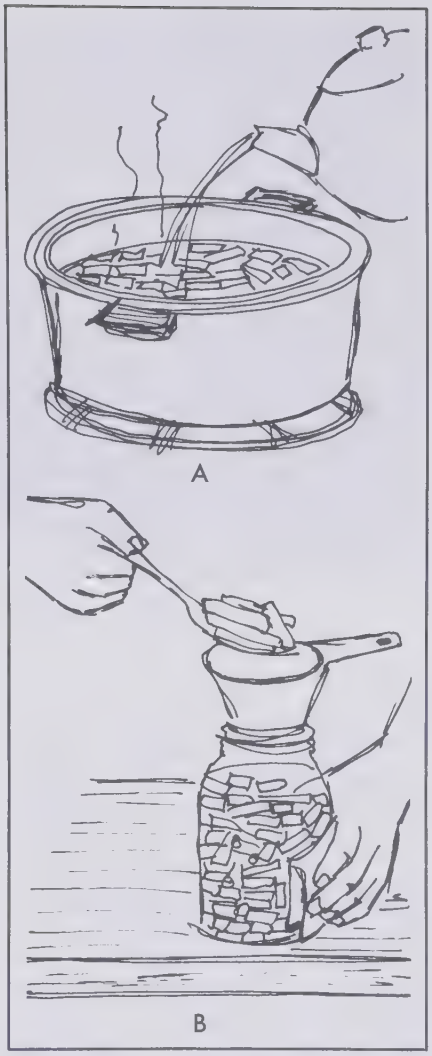
You can use one of two methods to pack food into jars—hot pack or raw pack.

- *Hot Pack.* This method calls for a short precooking and can be used for almost all fruits and vegetables.
- *Raw Pack.* This method is sometimes called "cold pack." It is used only for fruits. Raw fruit is packed into a clean jar and covered with boiling water, syrup, or fruit juice.

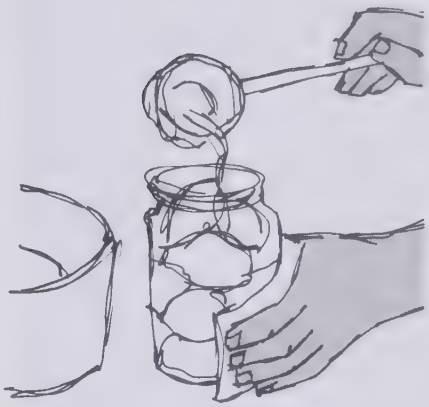
Processing Methods

After food is packed into jars, it must be processed at boiling temperature or higher to kill microorganisms. Cooking food before packing does not kill all of the harmful microorganisms.

In home canning, foods are divided into two classes—high acid and low acid. Sauerkraut, pickled foods, tomatoes, and all fruits are *high-acid foods.* All vegetables except those just listed are *low-acid foods.* These two categories are important because each needs a different type of processing. High-acid foods are processed in a hot water bath, sometimes called boiling water bath. Low-acid foods need higher temperatures to kill microorganisms so they must be processed by steam under pressure.



Hot pack method. (A) Food is cooked for just a short time and (B) packed hot into clean jars.



Raw pack method. Raw fruit is packed into a clean jar. It is covered with boiling water, syrup, or fruit juice.

Why must extra care be taken when processing low-acid foods? You may recall that botulism poisoning can occur in some canned foods. See Chapter 15. The *botulism* toxin is produced by the bacteria, *Clostridium botulinum.* These bacteria cannot grow in the presence of air or in high-acid foods, such as fruit. They grow best in tightly sealed jars of low-acid foods—vegetables, meats, fish, and poultry.

Botulism bacteria can be destroyed by boiling. However, boiling does not destroy the spores. In home canning, the bacteria spores can be destroyed in only one way—by processing low-acid foods in a steam pressure canner.



Vegetables, such as collards and other greens, are considered low-acid foods. They must be processed by the steam pressure method.



All fruits and tomatoes are considered high-acid foods. They are processed in a hot water bath canner.

HOT WATER BATH METHOD

In the *hot water bath method,* jars of high-acid food are placed in a kettle of boiling water and heated to a temperature of 100 °C [212° F.]. Enough heat is supplied by the boiling water to kill those microorganisms and enzymes which cause high-acid foods to spoil.

For this method, you will need a water-bath canner—a large kettle with a tight-fitting cover. A divided rack or metal basket holds the jars off the bottom of the kettle and keeps them separated. This allows the boiling water to circulate around them.

Follow recipe instructions carefully for the amount of time the jars must stay in the hot water bath.

STEAM PRESSURE METHOD

The *steam pressure method* is used for canning all low-acid foods such as vegetables, meats, fish, and poultry. Jars of food are processed in a steam pressure canner under pressure at 116 °C [240° F.]. Enough heat is supplied to destroy microorganisms and enzymes which cause low-acid vegetables and other foods to spoil.

Be sure the pressure canner works properly. Ask your county home extension home economist or the dealer about checking the gauge, or write to the manufacturer. Read the manufacturer's directions carefully before attempting to operate the canner.

OPEN KETTLE METHOD

In the *open kettle method,* the food is cooked in an uncovered kettle. The boiling hot food is poured into sterilized hot jars and sealed.

Do not use this method for any food except jelly. It does not cook the food at a high enough temperature to kill microorganisms. It can be used for jelly because the high sugar content acts as a preservative. However, many food experts recommend that jelly also be processed in the hot water bath.

OVEN CANNING

Never process jars of food in an oven. Perhaps you know of someone who has used this

method successfully. That person has been very lucky in not having had a serious accident. This is a dangerous method of processing because jars may explode in the oven or during the cooling period.

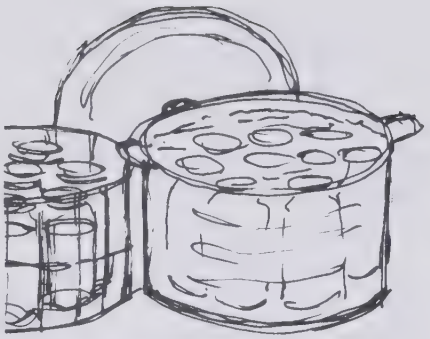
In addition, the jars cannot heat uniformly in the oven at the same time. Temperatures in different parts of the oven may vary. Therefore the temperature of some of the food in the jars does not get high enough to destroy all microorganisms.

To Seal Jars

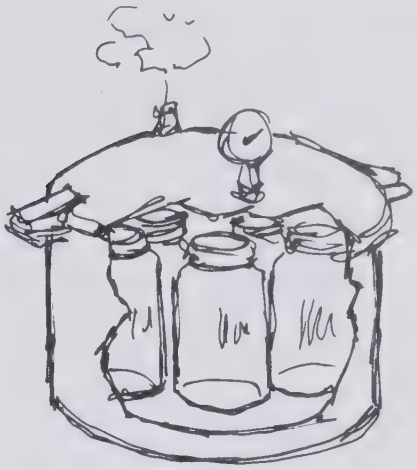
A perfect seal between lid and jar is necessary to keep the food from spoiling.

When jars are processed, the gases inside expand and escape through partially sealed lids. This is called *venting*. It happens automatically because the jars have not yet completely sealed.

The jars seal themselves automatically after the processing has ended and they have been removed from the canner. As the jars cool, a partial vacuum forms on the inside which helps in keeping a tight seal. The sealing compound or rubber ring makes an airtight contact between the lid and the jar, retaining the vacuum. This prevents outside air and microorganisms from getting into the jar. Nicks, cracks, or rough edges on jars or damaged lids prevent the vacuum from forming by letting air into the jars. Thus the jars cannot seal properly.



A water bath canner is used for processing high-acid foods. It has a tight-fitting lid and a metal rack to hold jars.



A steam pressure canner processes jars by steam under pressure, creating temperatures above boiling. The high heat destroys microorganisms which cause low-acid foods to spoil.

To Store Canned Food

Store canned food for at least two weeks before using. This allows flavors to develop.

Dried food particles on jars attract insects to the storage area. Before storing, wash the outsides of jars with a warm, soapy cloth. Rinse well and dry.

Be sure the storage area is dark, dry, and cool. If possible, temperatures should be below 29 °C [65° F.] but not freezing. Heat and light cause canned foods to lose nutrients and flavor very quickly. Dampness can corrode the lids so they will be difficult to open.

Jars of canned food should not be frozen. If frozen accidentally, food will soften. However, the food will not spoil unless the seal has been broken. This may happen if the frozen food expands and presses up against the lid.

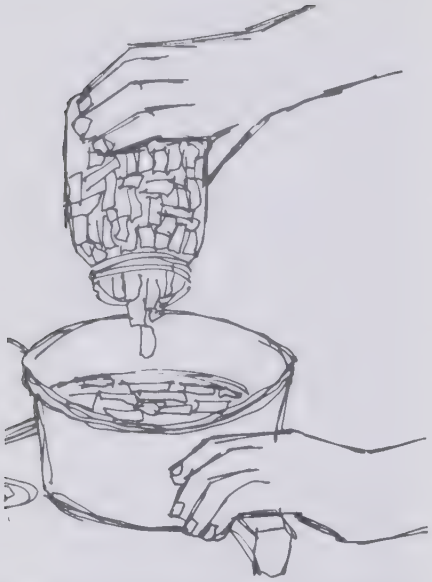
If the food has been properly processed, sealed, and stored, it can be kept for about a year. Some foods will keep longer than others. However, natural chemical changes begin to show up within a year, so plan to use the food within that time.

To Use Canned Food

Examine jars carefully before opening. If these signs of spoilage appear, do not taste or use the food. Destroy it.

- *Bulging lid.*
- *Leakage.* Liquid has run down from under the lid.

To open a jar sealed with the two-piece lid, puncture the lid with a sharp, pointed can opener. The hole allows air to rush into the jar, breaking the vacuum. The lid can then be removed easily. With one-piece metal lids, pull the lip of the rubber ring. This breaks the vac-



Never taste home-canned vegetables or other low-acid foods cold out of the jar. Always boil them first for at least 10 minutes.

uum, and the lid can be easily unscrewed.

Examine jars carefully when you open them. Look for these signs of spoilage:

- *Mold.* This will appear as a fuzzy patch under the lid or inside the jar.
- *Fermentation.* The liquid bubbles on the surface. There is also a fermented odor as the jar is opened.
- *Spurting liquid.* As soon as the vacuum is broken, liquid spurts out through the opening or from under the rubber ring.
- *Strange odor.* When you open the jar, the odor is not typical of the food.
- *Food is unusually soft.* Although canned food is usually as soft as cooked food, it becomes mushy if spoiled.
- *Cloudiness.* Contents of jar look cloudy. Although cloudiness may be caused by minerals in water or starch in vegetables, it may also be a sign of spoilage.

If any of these signs appear, do not taste the food. Destroy it immediately so that no one, not even an animal, can eat it.

No matter how carefully vegetables or other low-acid foods have been processed at home, *never* taste them cold. Canned food containing toxin does not always have a bad odor and often looks normal and edible. *To be on the safe side:* Never eat home-canned vegetables and other low-acid foods without boiling them for at least 10 minutes. Boil spinach and corn 20 minutes. If the food looks spoiled, foams, or has an off-odor during heating, do not eat it—destroy it.

Let's Explore and Report

- Be part of a research committee to seek information on recent cases of botulism poisoning in the United States. You can get this information from references in the library or from your local health department. Discuss how these cases could have been prevented.
- Can a mild-flavored vegetable, such as green beans, by the steam-pressure method. Use the smallest jars available. Use plain water for one jar. Add different seasonings to other jars. Process. In several weeks, open the jars, boil the vegetables, and taste test for flavor.
- Find out how foods were preserved at home 40 or 50 years ago. Talk to senior citizens in your community. Also use resources in your library. Compare the canning methods of the past with those used today.

TO MAKE PICKLED FOODS, JELLIES, AND JAMS

Look for these terms
brine
pickled foods
relishes

Canned fruits and vegetables can be given distinctive flavors by using ingredients such as sugar, salt, vinegar, and spices. These products must be prepared according to specific recipes so that the correct proportions of ingredients are used.

Pickled Foods and Relishes

Pickled foods are packed in a pickling liquid which contains salt, vinegar, water, and spices. Some pickle products, such as cucumbers, green tomatoes, and sauerkraut, are fermented in a *brine.* The vegetables are placed in a large crock with a solution of water and salt. They ferment for three weeks or more, and then are packed in jars and processed.

Relishes can be combinations of fruits, vegetables, or both.

They are chopped, mixed with salt, vinegar, sugar, water, and spices, and cooked to the desired consistency. Relishes may be mild or hot and spicy.

Fruit pickles are simmered in a spicy sweet-sour syrup. Some of the fruits prepared by this method are pears, peaches, apple rings, and watermelon rind.

All pickled foods and relishes should be processed in the hot water bath. Follow the time given in the recipe.

- *Ingredients.* Use only tender vegetables and firm fruit—not too ripe. *Use unwaxed cucumbers for pickling whole*—the brine cannot penetrate waxed cucumbers. Clean food thoroughly.
- *Equipment.* For heating pickling liquids, use unchipped enamelware, stainless steel, aluminum, or glass utensils. Do not use copper, brass, galvanized, or iron utensils—the metals may react with acids or salt. They cause color change in the pickles and may form undesirable chemical compounds.

Jelly

Jelly is made by cooking fruit, extracting the juice, and combining it with sugar. It should be firm enough to hold its shape when turned from the jar, yet soft enough to be spread with a knife. Some jellies are clear, others translucent. This depends on the fruit used and the way the juice was extracted.

Preserves, Jams, Marmalades, Butters, Conserves

In preparing these products, follow recipes closely. To cook, use a large, wide pan with a flat bottom so the mixture has room to boil and foam without bubbling over. Prepare small batches so the food cooks quickly.

All of these products should be processed in a hot water bath for the length of time given in the recipe.

- *Preserves.* Fruits cooked with sugar. The fruit keeps its shape, is clear, shiny, and tender. The syrup will vary from the thickness of honey to that of soft jelly.
- *Jams.* Made by cooking crushed or chopped fruits with sugar until the mixture mounds up in a spoon. Many people prefer to use a commercial pectin in making jam. It cuts down on the amount of cooking time by thickening the mixture quickly.
- *Marmalades.* Small pieces of fruit cooked in a transparent jelly. Citrus fruits and peels are often included.
- *Butters.* Example: apple butter. Made by cooking fruit pulp with sugar. Spices may be added, the amount and kind depending on personal preference.
- *Conserves.* Similar to jams. However, they are usually made with at least two different fruits and contain raisins and nuts.

Thickness is difficult to judge when the product is hot. Cooking times given in recipes are approximate, so use them only as guides. It is impossible to give exact cooking times because conditions vary. For instance, the size and thickness of the kettle, the humidity, and the altitude affect the length of time it takes the mixture to thicken.

To store, clean jars with a damp cloth. Store in a cool, dark, dry place.

Let's Explore and Report

- Prepare two small batches of jam from the same kind of fruit. Thicken one by cooking. Thicken the other with commercial pectin, following manufacturer's directions. What are the differences in flavor, color, and texture? Which do you prefer? Why?
- Find ethnic or regional recipes for pickles, relishes, preserves, jams, butters, and conserves. Discuss variations.

What Would YOU Do?

- Your neighbor has spent several days canning a variety of vegetables. This is her first attempt at home canning, so she is very proud of the results. She has used herbs and spices to season the green beans. About two weeks later, she brings several jars to you as gifts, and also carries a small dish of her canned green beans. She wants you to sample the beans right away so she can see your reaction to the flavor.



Chapter 22

Serving and Eating Food

To help you to . . .

- **Serve food to make eating a pleasurable occasion.**
- **Understand what is considered acceptable behavior while eating.**
- **Know how to serve food for guests.**

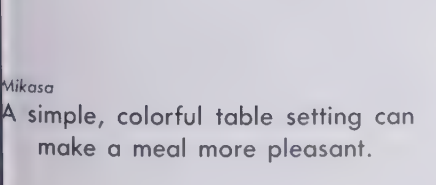
People are often concerned mainly with preparing food and getting it to the table. However, consideration for *how* the food is served can help to make the meal more pleasant.

SETTING THE TABLE

Look for these terms

china
crystal
glaze
napkin ring
open stock
pewter
silverplate
stainless steel
sterling silver
stoneware

An attractive, informal, and simple table setting can do a great deal to create just the right atmosphere for a meal or snack. A table setting usually includes tableware, table linens, and decorations.



Mikasa

A simple, colorful table setting can make a meal more pleasant.

Tableware

Tableware consists of dishes, glasses, and flatware, sometimes called "silver" or utensils.

Generally, high-priced tableware is sold *open stock*. This means you can purchase pieces separately. Inexpensive items are usually sold by the set, such as four place settings of dishes or flatware, or a carton of four or six glasses. Middle-priced items are often sold both ways—by the set and open stock.

Although open-stock pieces often cost a little more than a set would, they are more practical. You can add pieces as you wish and replace those that are broken. Since some patterns are made for only a few years, however, find out how long the pattern is guaranteed to be available before you buy it.

When selecting tableware:

- Choose colors and patterns you can mix and match for a wide range of combinations.
- Be sure tableware is dishwasher proof. Otherwise, you will have to wash it carefully by hand. Never put pieces in a dishwasher unless they are guaranteed dishwasher safe. They could chip or crack or the design might wash off.

DINNERWARE

Dishes, also known as dinnerware, are made of china, earthenware, ironstone, stoneware, plastic, and glass ceramic.

China, earthenware, ironstone, and stoneware are made of clay heated to a high temperature, or fired. The pieces are coated with a *glaze*, which gives a glass-like protective finish. Some clays are porous. If the glaze crazes (develops tiny cracks) or chips, the clay absorbs liquid and the piece turns dark.

• *China.* Also known as porcelain, but usually called "china" after the country of its origin. China is generally thin, highly glazed, delicate in appearance, and light and very strong in proportion to size. It is non-porous. China is translucent—if you hold a plate up before the light, you should be able to see the shape of your hand through it. There are three types of china: *Bone china* is chalk white because animal bone ash is added to the clay mixture. *Fine china* tends to be cream or ivory colored because of the type of clay used. *Casual china* is informal, heavier, very durable, and highly resistant to chipping and cracking; some is ovenproof.

• *Earthenware.* Thick as well as opaque and porous. Do not wash in boiling water or put in the oven to warm unless it is marked "ovenproof."

• *Ironstone and Stoneware.* Hard, durable, opaque, and non-porous. They are chip-resistant and come in informal shapes.

• *Plastic.* Comes in different grades of quality. Some has a delicate, lustrous appearance that looks like china. It is relatively inexpensive, practical, and break-resistant.

• *Glass Ceramic.* This material was originally developed for the nose cones of missiles and was eventually used in oven and top-of-the-range cooking utensils. As a dinnerware, it is guaranteed not to break, chip, or crack. It looks and feels like fine china. It is dishwasher safe and ovenproof. It can be taken from the freezer and put right into the oven.

When selecting dinnerware:

• Check the finish on the edges, especially the cups, to be sure there are no unglazed spots.

• Consider how the color and pattern will look with food.

• Look for dual-purpose serving pieces to use for both cooking and serving. They save you time, energy, and money.

To care for dinnerware: Store carefully so the pieces do not chip or crack. You can use pads between plates to protect them. Always rinse dishes as soon as you remove them from the table. If food particles harden, they are difficult to remove. Do not use scouring powders, pads, and steel wool because they can scratch the glaze.

GLASSWARE

At one time, crystal referred only to lead crystal—a high-quality glass made with lead to give it a heavier feel and brilliancy. When lead crystal is tapped gently, it has a clear, bell-like ring. It is usually the finest quality, most expensive glass you can buy.

Today *crystal* means clear glass of any quality. It can range from heavy, inexpensive, machine-produced glass sold in sets to very fine, expensive lead crystal.

Glasses come in two basic shapes—tumbler and stemware.

• *Tumbler.* A glass without a stem. A chunky, small size can be used for juice, appetizers, and beverages. A large tumbler can be used for other beverages.

• *Stemware.* Has a stem between the bowl and the base, which gives it an attractive, graceful appearance. However, stemware is more fragile than a tumbler because the stem can break easily.

When selecting glassware:

• Be sure the glass is well balanced so it does not tip over when full. It should be heavier at the base. If it tends to tip when empty, it will surely tip over when full.

• Handle the glass. Be sure it is comfortable to hold and to drink from.

• Choose pieces that can serve more than one purpose, such as a low tumbler to use for pudding or gelatin as well as for beverages.

• Keep storage space in mind. Glasses generally should not be stacked since they damage easily. However, some glasses are designed for stacking. If your storage space is limited, select those that can be stacked without damage.

To care for glasses: Handle glassware carefully. Hold fragile stemware by the base of the



International Pewter Co.

Pewter is popular as tableware. Pewter made since 1955 is relatively lead free and passes FDA tests. Antique pewter, however, may contain lead and should not be used for storing or serving food.

bowl and not by the stem. Don't plunge cold glassware into hot water—sudden and uneven heat may cause it to crack.

FLATWARE

Flatware includes knives, forks, spoons, and serving pieces. It can be made of silver, either sterling or plated, or stainless steel.

- *Silver.* By law, sterling silver must contain 92.5 percent silver with copper added to harden it. Silverplate has only a coating of silver over a base metal and is

Paper tableware is colorful and disposable. Heavy-duty wrapping paper was used to make the table runner and to decorate the wall above the serving counter.

Hallmark Inc.





Mikasa

To give you greater flexibility in setting a table, select tableware in colors you can mix and match. What kind of glasses, flatware, and table linens could you use with this stoneware?

much less expensive than sterling. Silver tarnishes and must be polished periodically. Storing it in a chest or drawer lined with tarnish-retarding cloth helps keep silver bright for a longer period.

• *Stainless Steel.* Never needs polishing. It is durable and less costly than silver. Stainless steel is available with handles made of wood, plastic, or pewter. If handles are made of pewter, the stainless steel parts are specially buffed to resemble pewter.

When you select flatware:

• Handle the pieces. How would they feel if you were cutting a piece of pot roast or stirring a cup of cocoa? Is the handle comfortable to hold? Are the pieces balanced so one end isn't much heavier than the other?

• Inspect the finish. The edges of the fork tines, knife blades, and spoon bowls should be smooth to the touch.

To care for flatware: Store flatware in divided drawers so you can easily find the pieces you want. This also keeps the pieces from being scratched and damaged. Special chests are available for storing silver and stainless steel. Rinse flatware immediately after using, even though you are not ready to wash it. Hardened food is difficult to remove, especially from the tines of forks.

TABLE LINENS

Table linens put the finishing touch on your table. They include tablecloths, runners, place mats, and napkins. Besides being decorative, they help protect the table top.

Originally, table linens were made of fine linen. Today, many materials can be used, as long as they are washable and colorfast.

• *Tablecloths.* They cover the whole table. For an attractive appearance, the cloth should hang at least 15 cm [six inches] below the edge of the table. Do not make it too long, however, as it may get in people's way as they sit at the table. Tablecloths on buffet tables may hang to the floor to give a luxury look.

• *Runners.* These are long, narrow cloths that cover the center of the table. They are often used along with placemats.

• *Placemats.* Instead of using a tablecloth, you can use placemats at each place setting. You can make your own placemats, if you wish, from inexpensive materials. Embroider or decorate them with appliqués, press-on designs, or other trims.

• *Napkins.* Napkins can be made of the same fabric as the tablecloth, but they do not necessarily have to match. You can

create many interesting table settings by using napkins in blending or contrasting colors and textures. Paper napkins and placemats are colorful and convenient to use. Some people enjoy using napkin rings. A *napkin ring* is a large ring made of metal, plastic, wood, or beads. The napkin is rolled and slid into the ring and placed as part of the table setting.

You can make attractive, inexpensive tablecloths and napkins from colorful bedsheets and bedspreads. Simply measure the table and allow the required amount for an overhang on each side.

DECORATIONS

A decoration, no matter how small or informal, can add atmosphere to your meal. It can be a potted plant you keep on your kitchen table or an attractive candle. Look around and use your imagination. You will probably find many items in your home to decorate your table, whether you dine alone or with family or guests. Here are a few ideas:

- Arrange a potted plant with a figurine or a candle on a straw placemat.
- Fill a small basket with real or artificial flowers, fresh fruit, or colorful gourds and dried autumn leaves.



Lenox

An elegant table setting combines blues and greens.

Let's Explore and Report

- Pretend you are purchasing dishes, flatware, and glassware. Decide how much you can spend. Select patterns and colors. Make up a visual display, using pictures from descriptive brochures. What pieces would you begin with? Give reasons for your selections.

HOW TO SERVE FOOD

Look for these terms

buffet service
cover
family style
service plate
table service

You can use one of two methods to serve food—table service or buffet. With *table service,* you serve meals to people seated at a table. With *buffet service,* people serve themselves from an assortment of food arranged on a serving table.

Table Service

The arrangement of dishes, flatware, glasses, and linen for one person is called a *cover.* The items are arranged in a certain way for the convenience of the person eating. The flatware used will depend on the food served.

You probably have some items in your home, such as plants, pitchers, and candles, that can be used for table decorations.



Follow these guidelines when setting a table:

- If food is served on plates from the kitchen, allow enough space on the cover for the plate.
- Knives are at the right of the plate, with the blades facing toward the plate.
- Spoons are to the right of the knives.
- Forks are to the left of the plate.
- Each type of flatware is placed in order of its use. For instance, the fork to be used first is farthest from the plate.
- Place the water glass just above the tip of the largest knife. Other glasses are placed to the right of the water glass. A coffee cup is to the right of the spoons.
- A bread and butter plate is placed above the forks. The butter knife is placed on the edge of the bread and butter plate, horizontally or vertically. For family meals, a bread and butter plate is not needed. The bread can be placed on the dinner plate. However, for guests you would probably want to use bread and butter plates and knives if you have them.
- The salad plate can be placed either to the left of the forks or above them, depending on the space.
- The napkin goes to the left of the forks, with the folded edge farthest from the forks. This makes it easier for the user to pick up the corner, unfold the napkin, and pull the napkin

down on the lap. If you are short of space, you can also place the napkin on the dinner plate or just above it, horizontally, on the table.

If a heated frozen dinner is on the menu, do not serve it in the original foil container. Instead, remove it onto a dinner plate.

With table service, food can be served family style at the table or put on individual plates in the kitchen. However, most families have their own variations.

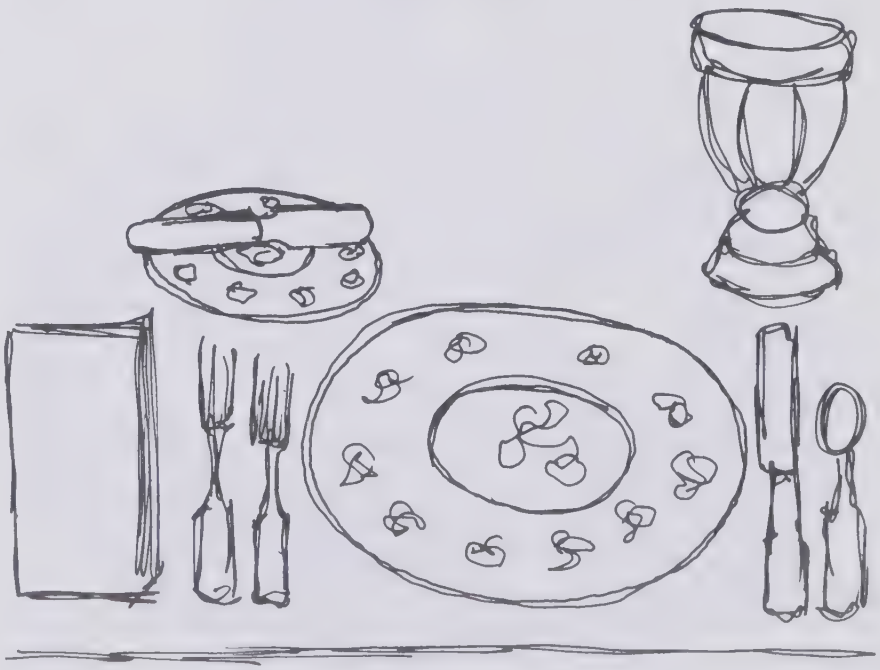
- *Family Style.* Foods such as meat, vegetables, salad, and bread or rolls may be placed in serving dishes. Foods baked in casseroles are served in those containers. People can help themselves, passing the serving dishes from one to another. To avoid confusion, it is best to have all the food passed in the same direction, generally to the right. Dessert can be served on individual plates from the kitchen or by one of the family members at the table. The main disadvantage of family style service is the possibility of overeating. People often develop the habit of helping themselves to more food than they should eat. Perhaps you've often said, "Oh, I know I shouldn't have another helping, but this tastes so good!" Sometimes people cannot finish the food so they leave it on the plate—a waste of food and money. In addition, bacteria grow rapidly in the food left



Hallmark Inc.

A bowl of fruit makes an attractive centerpiece for any meal.

Table setting or cover for one person. Knives and spoons are placed to the right of the plate and forks to the left. The napkin is usually placed to the left of the forks.



in the serving dishes during the meal.

- *Food Served on Plates.* Usually, the food is portioned out on individual plates in the kitchen and brought to the table. The service goes faster if family members help. This method has a number of advantages. It allows you to practice food portion control so each family member gets enough to eat but not an excessive amount. Of course, if seconds are wanted, they should be available. By controlling portions, you can help keep a tighter control over food costs and cut down on waste. Plate service can also keep bacteria growth to a minimum. As soon as the food is served, what is left can be put back in the oven to keep warm or in the refrigerator to keep cold. As a rule, this method is used only for family meals since members are familiar with how much each person eats. When guests are present, it is best to use the family style service so guests can help themselves to the amount they want.

FORMAL STYLE

You may be served formal style at a banquet or in some restaurants. The table is set with silver, glassware, and a service plate. The *service plate* is used to serve the first course—either beverage, appetizer, or soup—and then removed with the empty bowl or glass.

For formal style service in the home, a maid or butler is needed to serve the meal. Today few families can afford such a luxury so a semi-formal style is often used, especially for entertaining. The host or hostess serve the guests at the table. This type of service can be very elegant.

The appetizer is served in individual portions from the kitchen. Dinner plates are stacked on the table in front of the host. The foods for the main course are in serving dishes on the table. If the meat course is a roast, the host usually carves it at the table. The host serves the meat and vegetables and passes the plate to his right. The plates should be passed to the person at the end of the table. When the people on the right have been served, the host then serves those on the left. The salad may be on individual plates served from the kitchen. It may also be served at the table from a salad bowl.

Beverages can be served with the meal or after, with dessert. Many people enjoy drinking their beverage as they eat, so it is best to be prepared to serve it during the meal.

CLEARING THE TABLE

When clearing the table, pick up the dish with your left hand from the person's left and transfer it to your right hand. Do not scrape dishes or stack plates at the table.

Buffet Style Service

Buffet service is the easiest way to serve a large group. The table is set so guests can move easily from one food to another to serve themselves.

When setting up a buffet, decide first where you want the guests to begin. Stack the plates at that point. After that, place the main dish, followed by vegetable, salad, rolls, and butter. Place napkins and flatware last. If you make small packages by rolling the flatware up in a napkin, people can pick them up easily.

Serving buffet style can be anything from informal to elegant. You can set the food on a buffet, a kitchen counter, or two small card tables placed together. Perhaps you don't have one area large enough to hold the food or to combine tables. In that case, use several small tables set in different parts of the room. For instance, plates may be stacked on one small table. Another table may hold the main course, vegetable, and salad. A third table may hold rolls, flatware, and napkins. Beverage and dessert may be on the kitchen counter. Arrange the food so traffic flows easily from one table to the next. Otherwise, you could have a confusing traffic jam.

Be sure guests have enough space to eat. Small TV trays are helpful and convenient. If you have floor cushions, people can sit at low coffee tables.

Keep these points in mind when planning a buffet:

- Make certain you can keep hot food hot and cold food cold. Use a warmer or heated serving tray for the hot food. Serve cold food on ice or in insulated containers.
- Select foods that are easy to handle. Casseroles and other foods in small pieces make it easy for guests to serve themselves. Avoid foods that may have to be cut before they are eaten, especially if guests must hold the plates on their laps while eating.
- Serve beverage later, after the guests are seated.

RECEPTIONS

Buffet service is used at teas and receptions, but these events are usually formal. Even in today's casual life style, you may have occasion to give a tea or a reception. Club groups often have such events to introduce new members. You may want to have a reception for a visiting relative or to celebrate a special occasion such as a wedding anniversary.

Usually, a large table is used for the food, with coffee served at one end and tea at the other. If you wish you may also serve fruit punch. Tiny fancy sandwiches, cakes, cookies, candies, and nuts are arranged attractively on plates and trays.

If you expect a large group, divide the table in half and offer the same food on both sides.



Lenox

In formal service, a service plate is used to serve the first course.

When serving buffet style, arrange the items in logical order so guests can help themselves easily to plates, food, and flatware.





Stauffer Chemical Co.

A small eating area in the kitchen can be pleasant and cozy.

This will enable people to go through in two lines instead of just one.

Atmosphere

Have you ever eaten in a restaurant only because you enjoyed the special atmosphere? Perhaps the lights were dimmed, the music soft and soothing, and the employees pleasant and helpful. How did you feel? The food may not have been any better than in other restaurants, but the atmosphere gave you a chance to relax and enjoy your meal.

You can do the same with meals you serve at home. A pleasant atmosphere can do a great deal to help make the meal more enjoyable and easier to digest. Whether you eat at the kitchen table, a card table, or in the dining room, add a touch of atmosphere. Just dimming the lights, using smaller-size light bulbs, and burning a few candles can add an air of serenity.

Keep the conversation pleasant and cheerful. Mealtime is not the time for hurrying, arguing, or airing the day's problems. You might want to review Chapter 3 on digestion. Emotions and eating habits affect the way food digests and how you feel after eating.

If a family member has to rush to get to work or to an evening activity, do all you can to help. When people are in a hurry, especially in the morning, or when they are tired after a hard day's work and heavy traffic, tempers can flare easily. You can do your part to keep emotions under control. Help to prepare and serve the food so meals are on schedule. Your cooperation can help improve the mealtime atmosphere.

Let's Explore and Report

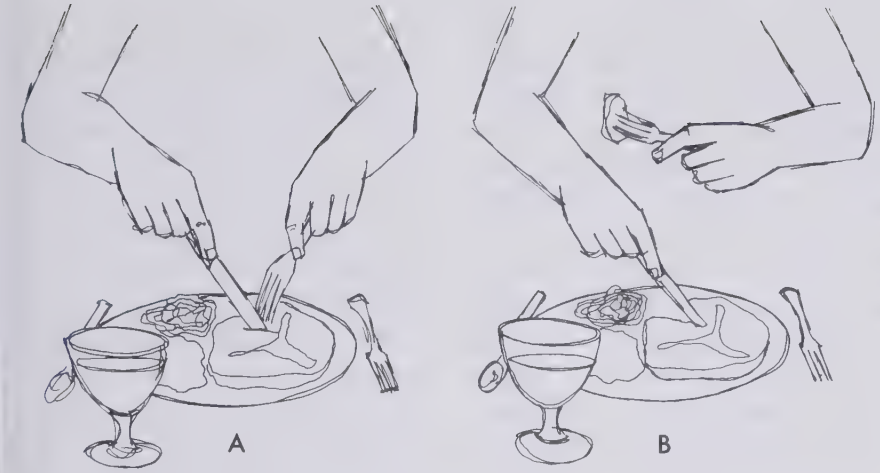
- Make up a menu for breakfast, lunch, and dinner. Make drawings showing the cover for each meal.

TABLE BEHAVIOR

Look for these terms
Continental system
chopsticks

Just as guidelines for table setting were developed for convenience, so rules of table behavior grew out of consideration for others. Keep in mind, however, that eating methods vary in different countries.

People in the United States eat by transferring food from the plate to their mouth with a fork, but in a round-about manner. If the food has to be cut, the fork is held in the left hand and the



The Continental style of eating. (A) Food is cut with the fork in the left hand and the knife in the right. (B) The fork is held in the left hand, tines down, to transfer food to the mouth.

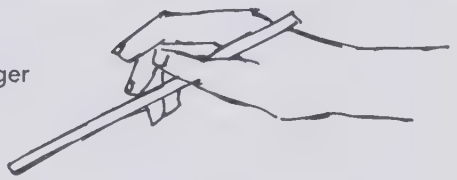
knife in the right. After the food is cut, the knife is placed on the edge of the plate. The fork is transferred to the right hand, the food picked up with the fork with the tines up, and then placed in the mouth.

Europeans use a more direct method, known as the *Continental system.* The fork is always held in the left hand. The food is speared with the fork and cut with the knife held in the right hand. The food is transferred to the mouth with the fork still in the left hand, tines down. This leaves the right hand free for cutting food with a knife and avoids transferring the fork back and forth.

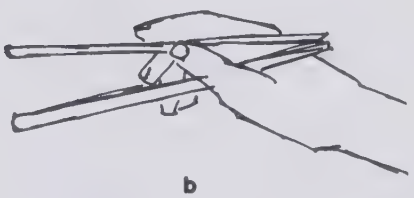
Not all people use knives and forks. In the Orient, food is eaten with chopsticks, or two short bamboo sticks. The chopsticks are held with the fingers of one hand and manipulated to pick up food and transfer it to the mouth.

Chopsticks are used to eat with in many parts of the world.

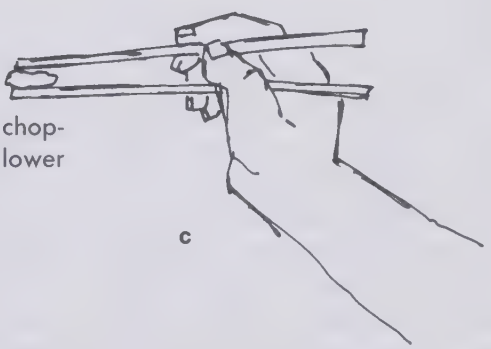
Hold one chopstick on third finger and grip securely with thumb.



Position second chopstick between thumb and first two fingers.



To pick up food, move upper chopstick up and down but keep lower one steady.



Some people in southwestern United States, in Mexico, and in other countries use tortillas or bread for eating food. The tortillas are held in the hand and used as a scoop to transfer food from the plate to the mouth. As discussed in Chapter 1, people in many parts of the world use their fingers for eating.

Table manners in different countries also vary widely from those considered acceptable in the United States. For instance, Americans consider it impolite to use a toothpick in public. Many Europeans, however, use a toothpick at the table immediately after eating. In some European countries, soup is slurped loudly rather than eaten quietly. In some cultures a loud burp draws no apology—it compliments the cook by showing that the diner is happy and satisfied with the food.

Although today's manners in the United States are casual and informal, certain guidelines are still followed. Here are some tips on table behavior, according to *The New Emily Post's Etiquette*. These rules reflect current changes in life styles which have led to more informal table behavior.

- If the group is small, be sure everyone has been served before you start to eat. In a large group, however, you can start to eat as soon as three or four people have been served. Otherwise, the food will be too cold to be enjoyable.
- If you must cough, sneeze, or blow your nose, turn your head away and use a handkerchief or disposable tissue. If you have a long siege of coughing, you might want to excuse yourself and leave the table.
- At home or at informal restaurants, chicken, steaks, and chops may be eaten with the fingers. Use a knife and fork to cut off as much meat as you can. Then pick the bone up with your fingers and chew the remaining meat off. At dinner parties and in formal restaurants, however, only a few foods should be eaten with the fingers, such as olives or celery.
- If you are being served family style, do not take more food than you can eat. Be sure to pass plates promptly so everyone will be served while the food is at the correct temperature.
- You can reach for food as long as you do not reach in front of the person sitting next to you or lean too far across the table. If you cannot reach the food easily, ask your neighbor to pass it to you.
- If you are having difficulty getting food on the fork, such as the last few pieces of vegetable, push it on with a piece of bread or with a knife.
- To enjoy all of the sauce or gravy, drop a few small pieces of bread into it. Eat the bread with a fork.
- Avoid putting your elbows on the table as you eat—you may crowd your neighbor. Between courses, however, you may rest your elbows on the table if you feel more comfortable.
- Cut large pieces of food into small ones and eat small portions at a time. Thousands of people have choked to death trying to swallow too large a portion of food.

Let's Explore and Report

- Select an ethnic group and research their table manners. Compare with those in the United States. Demonstrate to the class the differences between the two cultures.

ENTERTAINING

Look for these terms
customs
R.S.V.P.

Food and friends make an excellent combination for sociable get-togethers. Whether you're having a casual evening with just a few friends or a party for a crowd, a little planning can make the event more successful.

Holidays

Traditional holidays in the United States offer you many opportunities for parties and fun. However, members of ethnic groups have certain holidays they celebrate which other groups do not. The Chinese, for instance, observe their New Year near the end of January. Jewish people have a number of holi-

days commemorating outstanding events in their history.

Why not share your holiday celebrations with those outside your culture? You have every right to be proud of your cultural heritage. Your friends will appreciate learning of your customs and traditions and eating the food customarily served at those times.

If you attend an ethnic celebration, you may be served food which is unfamiliar to you. Make it an adventure—you may find yourself developing a taste for exciting ethnic foods.

Parties

Parties can vary from an impromptu gathering of a few friends to an elaborate affair for a large group. You can serve a snack and a beverage or an elegant buffet.

INVITATIONS

If you're having an impromptu gathering, you'll probably just ask your friends in person or by phone. However, if you're having a larger group, it's best to send written invitations to avoid mixups as to time and date. Give the date, time, and place. If special dress is needed, include that information. It's best to ask your guests to R.S.V.P., which stands for "Repondez, s'il vous plait." This is French for "Please reply." This way, you will know how many guests to expect and how much food to prepare.

CLEANING UP

Plan the cleanup at the same time you plan the party. Since this is your party, don't depend on your family to clean up after you.

Select an area in the kitchen where you can rinse glasses and dishes as they accumulate. It should be away from the place where you will be refilling bowls and plates with food. Have plenty of clean towels and paper towels available.

After the party, no matter how tired you are, put leftover food in containers and store them properly. Wash, dry, and put away dishes. Clean up the party area. Ask several friends to help you—it'll make the job easier. Cleaning up will also make it easier for you to get your family's permission to give another party.

YOU AS THE PARTY GIVER

As the one giving the party, you have certain responsibilities to your guests.

If any of your friends are on special diets, have at least one food and beverage they can eat. Serve a low-calorie dip with fresh fruits and vegetables, for instance. Your consideration will be greatly appreciated by any guests with special food needs.

If some of your guests are strangers to the group, be sure to introduce them. When introducing people, try to give some information about one of the persons for a conversation starter.

Introductions today are usually casual. To introduce a newcomer to a group:

"This is Sarah Wilson. She loves to collect old advertising posters." Then introduce several members of the group and let them take over the rest of the introductions.

Introduce adults to each other by just giving names:

"Liza Jordan, Vince Martinelli. Vince just bought a new motorcycle."

Introduce a younger person to an older person, giving the older person's name first:

"Mr. Slavin, this is Toby Drake. Toby has a part-time job at the Greenhouse Restaurant."

If he is seated, a male always stands up when introduced, whether to a female or another male. A female, if seated, stands up when introduced to an older female or a dignitary, such as a minister.

Parties are more fun for everyone if you have an activity so guests can mingle and get acquainted. You'll find many ideas for "mixers" in current issues of magazines and newspapers. Games, music, and dancing help make the party more enjoyable.

A theme for your party can give you many ideas for selecting food, decorations, and games. You can, for instance, plan a Mexican fiesta or a Hawaiian luau. If your friends are

Coney Islands

Metric		Ingredients	Customary
Weight	Volume		
8	8	Frankfurters, slit lengthwise	8
30 g	30 mℓ	Butter or margarine	2 tablespoons
638 g	2 cans 319 g each	Condensed chili beef soup	2 cans 11¼-oz. each
—	160 mℓ	Water	⅔ cup
8	8	Frankfurter rolls, split and toasted	8
170 g	240 mℓ	Chopped onion	1 cup

Yield: 8 sandwiches
Pan: Large skillet
Brown frankfurters in butter or margarine in large skillet.
Mix soup and water in bowl. Add to skillet.
Heat, stirring occasionally.
Place frankfurters in rolls.
Spoon chili over frankfurters.
Garnish with chopped onion.

football fans, you may want a kick-off party after the first game in autumn.

YOU AS THE GUEST

If you have received an invitation, answer it immediately—don't wait until the last minute. A prompt answer will help the party-giver plan special items that may have to be made up ahead of time. When you reply, be sure to repeat the date and time, just in case the invitation had an error in it.

Be sure to arrive at the time specified. A late guest means the food may become cold or it may dry out and be unappetizing.

Unless you have been asked to help, avoid arriving early. Last-minute preparations for a party or dinner can be frenzied. An early arrival just adds complications.

Greet the party-giver's parents and other members of the family, if they are present. If a special request is made regarding behavior, accept it graciously and cooperate. "Mom's awfully tired today. She had to work overtime taking inventory, so let's keep the music low."

If you see opportunities to assist the party-giver, pitch in and offer to help. Remove empty soft drink bottles as they accumulate. If food falls on the floor, pick it up before someone steps on it. Wipe up any spills, whether on the floor or furniture, immediately.

BEVERAGES

Beverages are an important item at any meal or party. If you've invited friends, you'll probably serve soft drinks. You may, however, want to consider a fruit punch. It can be served in a pitcher or a punch bowl. If you don't have a punch bowl, you can use any large bowl. Decorate it with foil, colorful self-sticking plastic, or stick-on designs such as flowers. Use a long-handled ladle and serve the punch in attractive paper cups.

An ice ring floating in the punch bowl lends a colorful note. To make an ice ring, freeze fruit such as cherries or strawberries in punch or water in a ring mold. Remove from the mold and float on top of the punch. You can also float lemon, lime, or orange slices or other fruit, depending on the flavor of the punch.



Campbell Soup Co.

Ingredients for a party—friends, easy-to-prepare foods such as coney islands or pizza, and music.



Kraft Foods

Simple-to-make party snacks. Spread luncheon meat slices with softened cream cheese and wrap around bread sticks. You can also wrap the meat around dill pickle sticks and slice.

Adults may prefer coffee or tea as a beverage.

Coffee

Coffee comes in three different grinds—coarse or regular, drip or medium, and fine or vacuum. The type you buy will depend on the kind of coffee maker you use.

- *Percolator.* A percolator uses coarse or regular grind coffee. The pot has a coffee basket supported by a hollow tube. Water bubbles up through the tube, then sprays gently over the coffee grounds. As it seeps through the grounds, the flavor is extracted.
- *Drip.* The drip coffee maker uses drip or medium grind coffee. The pot has two bowls, upper and lower, with a filter section or cone. Boiling water trickles slowly through the coffee grounds once and extracts the coffee essence.
- *Vacuum-Type.* The vacuum coffee maker uses vacuum or fine grind coffee. The pot has two bowls with a long stem extending from the upper bowl almost to the bottom of the lower bowl. Steam from boiling water creates pressure which forces most of the water up into the top bowl. The water bubbles through the coffee grounds. When the lower bowl cools, a vacuum is created that pulls the brew through a filter into the lower bowl.

The method to use depends on personal preference. Some people seem to get better results with one type of pot than they do with another.

When you brew coffee, be sure the coffee maker is clean. Start with fresh, cold water. If you are making coffee for a crowd, make up several pots in advance. Pour the coffee into serving pots and keep it warm on the range.

Many coffee makers have markings on the sides showing coffee and water levels for a specific number of cups. Some of these markings may be inaccurate. Check them carefully against the recommended amounts of coffee and water given in recipes or on the coffee container.

Follow the manufacturer's directions for making coffee in the pot.

Besides the standard coffees mentioned earlier, you can also serve coffee specialties:

- *Caffé espresso* or Italian coffee—an extra-strong coffee, served in demitasse (tiny) cups with a twist of lemon peel and sugar, but never cream.
- *Café au lait*—a combination of equal amounts of freshly brewed coffee and hot milk, poured into a cup simultaneously from two pots.



United Dairy Industry Assoc.

A theme for your party can give you ideas for food and decorations. This party features a Mexican theme.



United Dairy Industry Assoc.

Any holiday can be a theme for a party—Halloween, for instance.



United Dairy Industry Assoc.

A hearty, nutritious meal for an after-the-game party—oyster stew served in cups, homemade bread with assorted sandwich fillings, salad, and chiffon pie.

Instant and freeze-dried coffee are available. Many people enjoy these convenience products but others claim they can tell the difference between brewed and instant coffee. One advantage of instant coffee is that you can make it by the cup to any strength desired.

If you're serving coffee for a crowd, instant coffee can be a time-saver. Make up the amount you need, using a large kettle, if necessary. Use the amount specified on the container, but add an extra 5 mℓ [teaspoon] "for the pot." Let the coffee simmer a minute or two to help develop the flavor.

Tea

Many varieties of tea are available, but they can be classified into three general categories—black, green, and oolong. The difference is determined not by the plant but by how the leaves were processed after they were picked. Black tea is most commonly used in the United States, with orange pekoe and pekoe black the most popular varieties.

Tea can be purchased as loose leaves in cans or boxes or as tea bags. Tea leaves are usually used in a tea pot so the leaves can be strained out as the tea is poured. Tea bags are easier and more convenient to use since you can make the tea in a cup or in a pot.

Iced Coffee and Tea

Iced coffee and tea are popular beverages in warm weather. For best results, make either beverage double strength since the melting ice cubes will dilute it. You can pour the hot beverage over the ice or chill it first.

Let's Explore and Report

- Make a list of the holidays your family's ethnic group celebrates and the food customarily served. Compare with your classmates.
- Discuss the different ways a family can serve food. Compare with your classmates.
- Brainstorm ideas for inexpensive ways to make tablecloths, napkins, placemats, and decorations.
- Hold a color clinic. Secure paper in different colors. Pretend the paper is a plate. Put different foods on it and decide



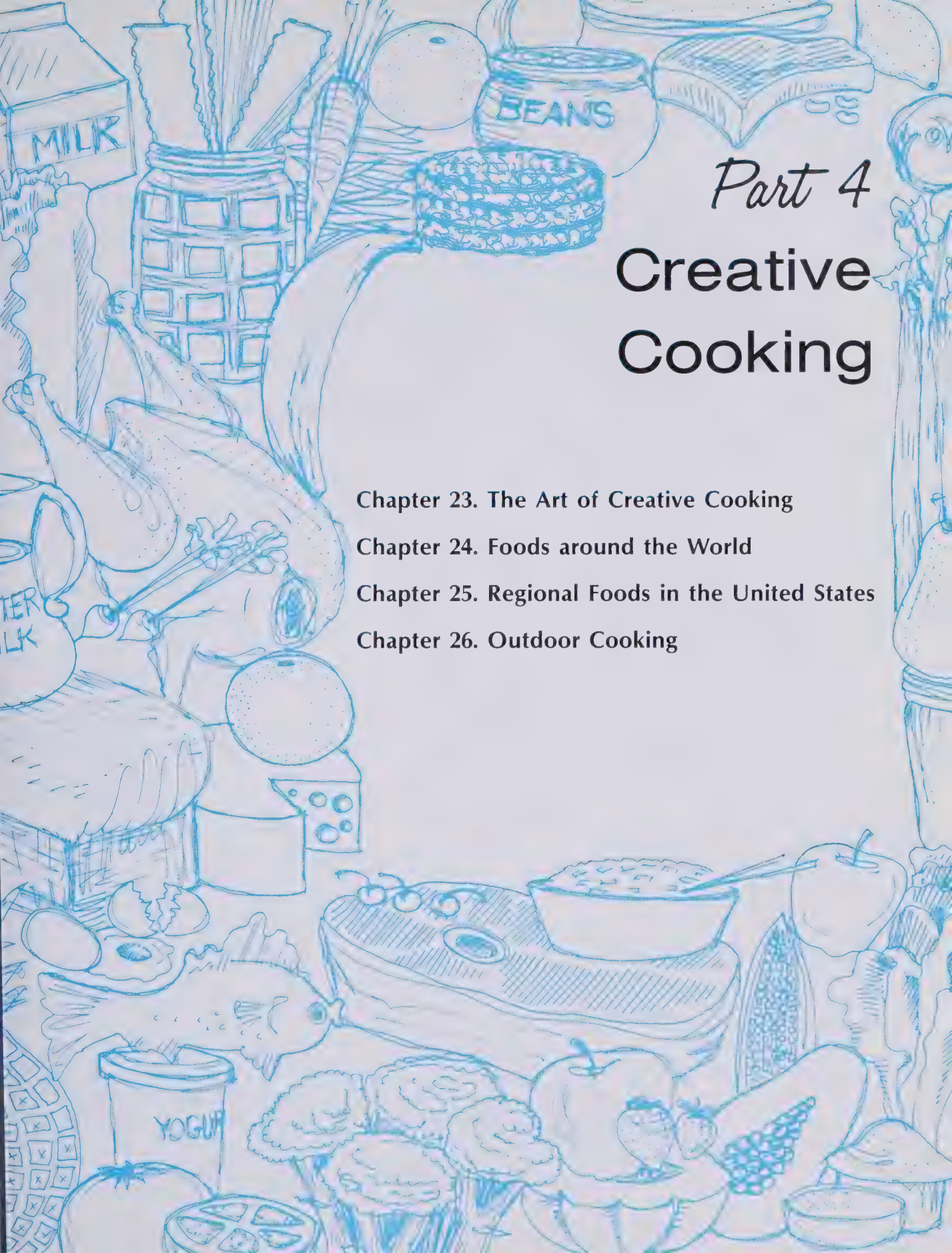
Kraft Foods

For guests who may be watching their weight, serve assorted fresh fruit with a low-calorie salad dressing as a dip.

how appetizing or unappetizing the combination would be. Make a chart rating the colors, beginning with the most usable color.

What Would YOU Do?

- Whenever your family gets together for meals, they enjoy lively conversation. However, recently, the topics they discuss have been leading to serious arguments. You would like to have the conversation at meal time more pleasant.



Part 4

Creative Cooking

Chapter 23. The Art of Creative Cooking

Chapter 24. Foods around the World

Chapter 25. Regional Foods in the United States

Chapter 26. Outdoor Cooking



Chapter 23
The Art of Creative Cooking

To help you to . . .

- **Cook creatively on a budget**
- **Add finishing touches to food.**
- **Select and prepare foods to give as gifts.**

How would you define creative cooking? Perhaps you think of it as being an artistic way of cooking. Some may think of it as food exceptionally well prepared and attractively served. To others, it may mean adding a special "touch" to a recipe to make it a little different. Many think of it as gourmet cooking. All of these descriptions are correct.

Creative cooking means using your skills, your artistic ability, and your love of food to give added appeal to what might otherwise be an ordinary meal. You might prepare a special sauce, create a new combination of foods, or add a different flavor with herbs or spices.

Fleischmann's Yeast
A basket made from bread dough is used for serving rolls.

Look for these terms
blends
crepes
crystalline candies
decorating tube
filo
flan
garnishes
herbs
noncrystalline candies
spices

CONVENIENCE FOODS, THE TIME SAVERS

Many people hesitate to try creative cooking because they think it takes extra time or special skills. It is true many recipes often are involved and take hours to prepare. However, many of the methods can be shortened by the use of convenience foods and still give you the results you desire.

For instance, hundreds of kinds of cake and cookie mixes are available. The packages usually give you ideas for variations. You can also write to the manufacturers for recipe booklets or search for creative ideas in magazines, newspapers, and cookbooks. As you gain experience, your skills and ingenuity may help you to develop ideas of your own for using these convenience products.

Take pie crust, for example, either box mix or sticks. What else can you use it for besides pie crust? You can make delicious cookies and pastries or use it to wrap an elegant roast known as Beef Wellington (see page 404).

Canned soups and soup and sauce mixes can open a new world of cooking for you. Use them in preparing main dishes and vegetables. Canned soups are convenient sauces if used undiluted or just partially diluted. They are especially useful in preparing casseroles.

You may want to develop your own casserole combinations. This is an excellent way to

California Plum Commodity Agreement

Convenience foods, such as cake, pudding, and pie mixes, save time and energy. They can be prepared in a variety of ways, such as combining them with fresh fruit.



General Mills, Inc.

Pie crust mix can be used to prepare tarts or assorted appetizers.

use leftover meats, vegetables, and cooked cereal and pasta. The chart on page 401 can help you get started developing your own creative casserole combinations.

CREATIVE CASSEROLES

- Select one or more ingredients from *each* group.
- Combine selected items from Groups 1–5 in a greased 1.2 ℓ [1½-quart] casserole; top with Group 6.
- Bake 30 minutes at 177 °C [350° F.]
- Makes 4–5 servings.
- May be doubled without increasing baking time.

Group 1

240 mℓ [1 cup] flaked or diced:

- Bacon, Canadian
- Bacon, cooked
- Bologna
- Cheese
- Chicken, cooked
- Chipped beef
- Crab, cooked
- Corned beef, cooked
- Eggs, hard cooked
- Frankfurters
- Hamburger, browned
- Lobster, cooked
- Meat, canned or cooked
- Salmon, canned
- Sardines, canned
- Sausage, browned
- Shrimp, cooked
- Tuna, canned
- Turkey, cooked

Group 2

1 can condensed soup plus 120 mℓ [½ cup] liquid

Suggested soups: Asparagus, celery, chicken, mushroom, shrimp, tomato, pea.

Group 3

240 mℓ [1 cup] cooked:

- Macaroni
- Noodles
- Rice
- Spaghetti

Group 4

Add any of these, if desired:

- Almonds, slivered
- Bean sprouts
- Catsup
- Celery, chopped
- Cheese, grated
- Chili sauce
- Chinese noodles
- Green pepper, diced or in rings
- Horseradish
- Mushrooms, browned
- Mustard
- Olives, sliced or chopped
- Onions or chives, chopped and browned
- Parsley, chopped
- Pimiento, diced
- Tomatoes, slices or wedges
- Vegetables, cooked
- French fried onion rings

Group 5

Add seasonings—herbs and spices—if desired. Begin with no more than 1 mℓ [¼ teaspoon]. Follow suggestions on any herb and spice chart. Do not add salt unless needed after tasting.

Group 6

Add topping to keep mixture from drying out:

Almonds, slivered

Bread or cracker crumbs with melted butter or margarine

Corn flakes, crushed and mixed with melted butter or margarine

Potato chips, crushed

Chinese noodles mixed with melted butter or margarine

A flavorful sauce is one of the characteristics of creative cooking. Many are available in convenience form, in jars, bottles, or as packaged mixes.

Let's Explore and Report

- Make a survey of cake mixes sold in a supermarket. Read package directions for any variations given. Make a list of the mixes and the different ways they can be prepared.
- Obtain a dinner menu from a gourmet restaurant. Make a list of the sauces and the foods with which they are served. Find recipes for each sauce. Describe how convenience mixes can be used in preparing the sauces.

GOURMET ON A BUDGET

Many gourmet recipes use low-cost foods, such as fish, poultry, variety meats, and less tender cuts of meat. Some,

Neopolitan Casserole

Metric Weight	Metric Volume	Ingredients	Customary
200 g	240 mℓ	Ready-to-eat Italian-style sausage, sliced or diced	1 cup
85 g	120 mℓ	Chopped onion	½ cup
185 g	240 mℓ	Cooked broccoli	1 cup
1 g	1 mℓ	Crushed oregano leaves	¼ teaspoon
305 g	1 305 g can	Mushroom soup	1 10¾-oz. can
—	120 mℓ	Milk	½ cup
160 g	240 mℓ	Cooked noodles	1 cup
50 g	120 mℓ	Dry bread crumbs	½ cup
20 g	60 mℓ	Grated Parmesan cheese	¼ cup
30 g	30 mℓ	Melted butter or margarine	2 tablespoons

Temperature: 177 °C [350° F.]
Yield: 4–5 servings
Pan: 1.2 ℓ [1½-quart] casserole
Combine sausage, onion, broccoli, oregano, mushroom soup, milk, and noodles in a 1.2 ℓ [1½-quart] casserole.
Mix bread crumbs and Parmesan cheese with melted butter or margarine.
Sprinkle over top of casserole.
Bake 30 minutes at 177 °C [350° F.] for 30 minutes.

however, specify expensive cuts of meat, such as beef tenderloin or veal. You can often achieve the same effects by substituting economical cuts.

For instance, Beef Wellington is normally an expensive gourmet creation. It is made with beef tenderloin covered with pâté de foi gras (liver paste), wrapped in puff paste, and baked. You can, however, make an economical version of the same recipe and still have the same creative effect—a tender, flavorful meat wrapped in a decorative crust. Tenderize a family steak to use in place of the beef tenderloin. If you prefer, you can use a meat loaf instead of the tenderloin. Spread the meat with canned liver spread. Use frozen filo, pie crust mix, or refrigerator biscuits for the dough.

If recipes call for veal, you can often substitute chicken or pork, which cost less. For instance, German wiener schnitzel is generally made with thin pieces of veal, breaded and fried. To cut the cost, use pork cutlets instead of veal.

Italian recipes often call for thinly sliced prosciutto, an expensive Italian ham. Substitute thinly sliced boiled ham for the prosciutto.

If the recipe specifies tenderloin or T-bone steak, use round steak and marinate it to make it tender or use a meat tenderizer.

Seafood recipes often use lobster, crab, or shrimp. If these are beyond your budget, substitute a white fish such as cod. Cooked in a rich sauce, it can give the same elegant effect as the more expensive food.

SERVE WITH A FLAIR

Often you can change an ordinary recipe into an extra-special one just by the way you serve it.



Campbell Soup Co.

One of hundreds of casserole combinations you can make. This one uses sausage, noodles, and mushroom soup.

Do you have a flair for drama? If you do, instead of serving a tossed salad, make it a Caesar Salad. This requires the same ingredients—but it lets you use your showmanship. The salad is prepared at the table, in full view of guests. Have the greens washed, drained, and torn, ready to use. Then prepare the dressing of oil, vinegar, seasonings, and anchovies. Rub the salad bowl with a clove of garlic. Then toss the greens, dressing, croutons, a raw egg, and grated Parmesan cheese. Caesar Salad costs no more than an ordinary tossed salad, but it is worth the extra effort it takes. With a little practice, you can put on a superb performance to entertain your guests.

What kind of pancakes do you like—thick or thin?



Adolph's Jeanette Frank Kitchens



Two ways to make an economical version of Beef Wellington—use a tenderized family steak or a meat loaf. Spread with canned liver spread and cover with filo, pie crust mix, or refrigerator biscuits.

Campbell Soup Co.

Caesar Salad

Metric Weight	Metric Volume	Ingredients	Customary
3	3	Anchovies	3
Dash	Dash	Dry mustard	Dash
—	1 mℓ	Prepared horseradish	¼ teaspoon
—	5 mℓ	Lemon juice	1 teaspoon
—	15 mℓ	Red wine vinegar	1 tablespoon
—	45 mℓ	Olive oil	3 tablespoons
150 g	480 mℓ	Iceberg lettuce, broken in pieces	2 cups
50 g	240 mℓ	Romaine lettuce, broken in pieces	1 cup
1 g	1 mℓ	Salt	¼ teaspoon
		Freshly ground black pepper	
20 g	120 mℓ	Croutons, plain or garlic	½ cup
25 g	60 mℓ	Grated Parmesan cheese	¼ cup
1	1	Raw egg	1

Yield: 2 servings.

Place anchovies on small plate, and sprinkle with mustard, horseradish, lemon juice, vinegar, and oil.

Mash with a fork into a smooth paste.

Place iceberg and romaine lettuce in a large salad bowl.

Sprinkle with salt and a generous grinding of pepper.

Add anchovy paste and croutons.

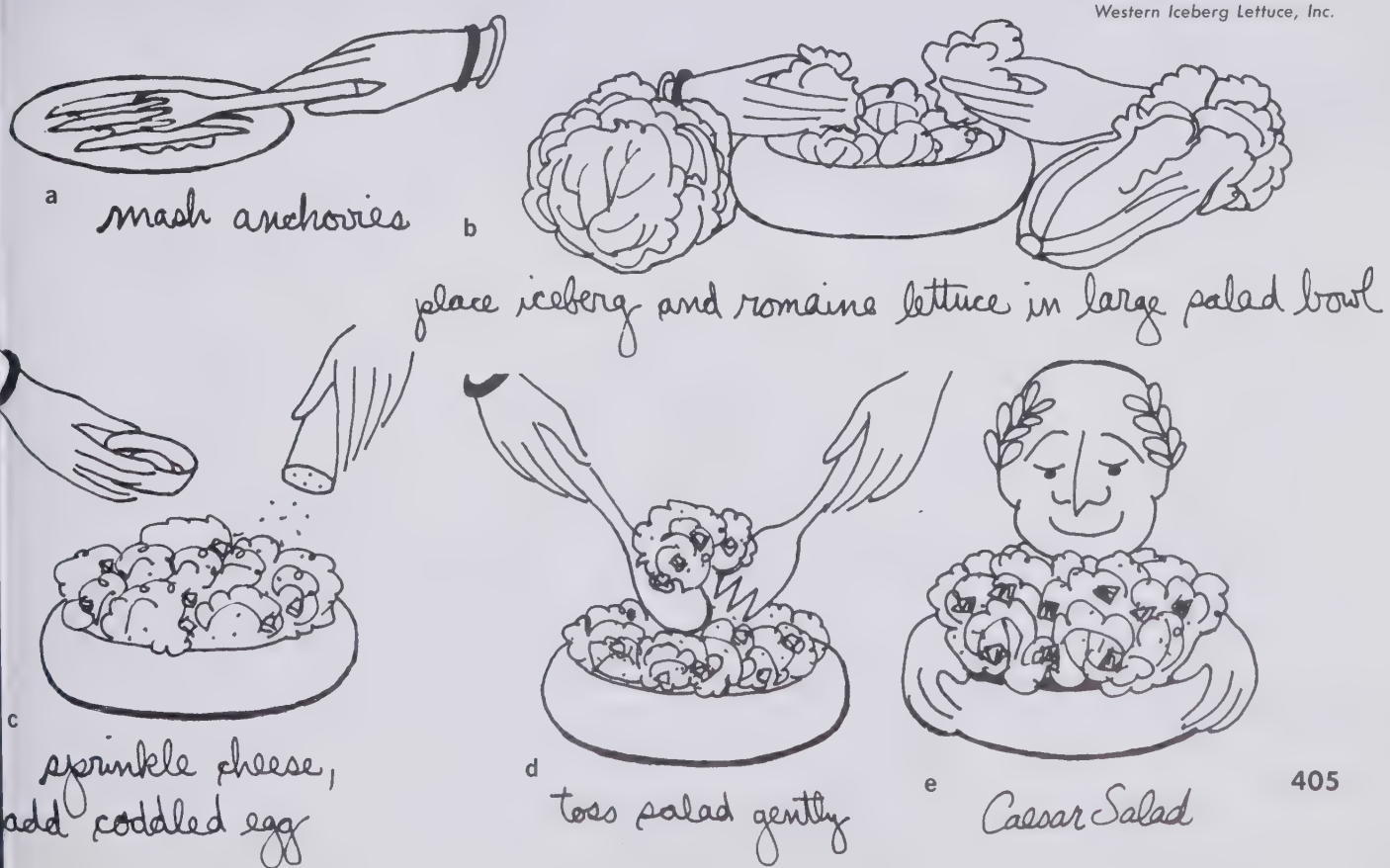
Sprinkle cheese on top.

Drop egg on top of cheese.

Toss salad gently until greens are well coated with dressing.

Add a dash of showmanship to your meal. Prepare a Caesar Salad at the table.

Western Iceberg Lettuce, Inc.





United Dairy Industry Assoc.

Cheese-filled crepes can be served with a fruit sauce.

If you make the pancakes very thin and roll them with a filling, you have *crepes,* a French gourmet's delight. For a main course, crepes can be filled with grated cheese, creamed foods, or meat mixtures. For dessert, fill them with fruit and top with ice cream.

Because crepes are easy to make, they are popular for after-show or after-game parties. You might select an assortment of fillings and toppings. As you make the crepes, let your guests select their own fillings and toppings.

Do you enjoy baking a fruit pie? Why not make a flan or individual tart instead? A *flan* is made in a pie-sized pan but with straight, fluted sides. If you do not have a flan ring or tart pans, you can make your own from heavy-duty aluminum foil. Just follow the illustrated instructions on page 407.

As you gain experience in making yeast dough, you will have many opportunities to design different shapes for breads and rolls. To serve the rolls you can even make a basket from yeast dough. (Page 398).

What can you do with a pizza? Most people think of pizza as a thin crust topped with assorted ingredients such as sausage, mushrooms, green peppers, anchovies, cheese, tomato sauce, and herbs. However, you can make many variations. Make it a two-crust pizza instead of one crust. Create mini pizzas, using flattened-out refrigerator biscuits as the base. A dessert pizza is made by baking a pizza crust, filling it with an artistic arrangement of canned or fresh fruit, and serving with whipped topping.

Let's Explore and Report

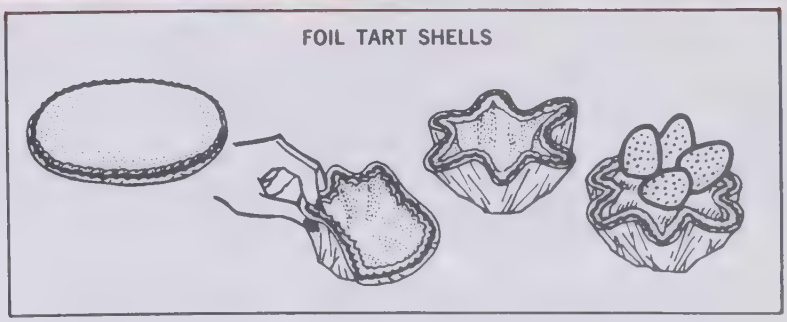
- Select a favorite main dish recipe. Using the principles of creative cooking discussed so far, determine how you can prepare the recipe to make it more appealing. Make up a poster showing your ideas.

HERBS AND SPICES

Just a pinch of an herb or spice can make the difference between a distinctive meal and a dull one. Herbs, spices, and blends can give a different flavor to almost any food.

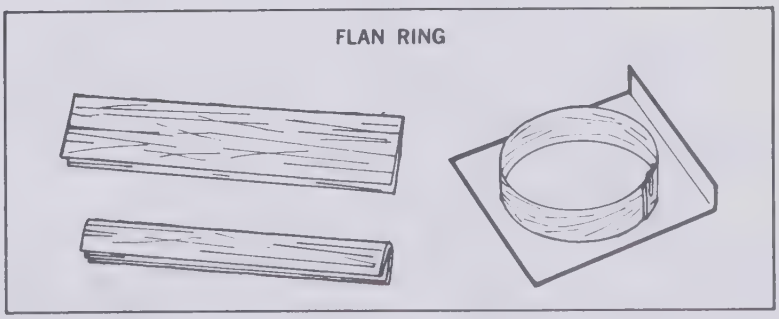
Reynolds Aluminum

A strawberry tart with a custard filling. Make your own tart pans. Roll out pastry on heavy-duty aluminum foil. Cut a 13 cm [5-inch] circle of foil and dough. Prick pastry well with fork. Bend foil to desired shape. Bake on baking sheet at 205 °C [400° F.] for about 10 minutes. Cool. Fill as desired.



Reynolds Aluminum

To make a flan ring, make a foil band by folding a sheet of heavy-duty aluminum foil into four layers. Form a ring and hold with clip. Place on cookie sheet. When flan is baked, unfasten foil band and remove. Slide the flan onto a serving plate.





Hellmann's/Best Foods Real Mayonnaise



Kraft Foods



Maine Sardine Council

Just three of the many varieties of pizza you can make. The top one features layers of cheese topped with tuna fish and tomato slices. The center one has tomato sauce, scrambled eggs, cheese, and mushrooms. The one on the left is made with spicy tomato sauce, mozzarella cheese, onion rings, and sardines.

Pizza

Metric Weight	Metric Volume	Ingredients	Customary
230 g	1 230 g can	Refrigerated crescent rolls	1 8-oz. can
230 g	240 mℓ	Tomato sauce	1 8-oz. can
1 g	1 mℓ	Crushed oregano	¼ teaspoon
1 g	1 mℓ	Crushed basil	¼ teaspoon
1 g	1 mℓ	Ground pepper	¼ teaspoon
2 g	2.5 mℓ	Crushed dried parsley	½ teaspoon
2 g	10 mℓ	Minced onion	2 teaspoons
1 g	1 mℓ	Small garlic clove, minced	1
—	30 mℓ	Olive oil	2 tablespoons
230 g	—	Mozzarella cheese, sliced or shredded	8 oz.
25 g	60 mℓ	Grated Parmesan cheese	¼ cup

Temperature: 191 °C [375° F.]
Yield: One 30 cm [12-inch] pizza
Baking pan: 30 cm [12-inch] pizza pan
Unwrap rolls and press dough into 30 cm [12-inch] pizza pan. Seal perforations and form crust with a 1.3 cm [½-inch] rim.
Bake at 191 °C [375° F.] for 15 minutes.
Remove from oven.
Heat in small saucepan the tomato sauce, oregano, basil, pepper, parsley, onion, garlic, and oil for five minutes to blend flavors.
Spread tomato sauce over crust.
Top with Mozzarella cheese.
Sprinkle with grated Parmesan cheese.
Bake at 191 °C [375° F.] for 10-12 minutes.

Variations:
Spread any one or more of the following on the crust and then top with sauce and cheeses as directed above.

- Fresh mushrooms cooked in butter or margarine
- Green pepper slices or rings
- Flaked tuna fish
- Sardines
- Pepperoni, sliced
- Pork sausage, browned
- Tomato slices

What are herbs, spices, and blends?

• *Herbs* are the leaves of plants usually grown in the temperate climate zone. They can be used either fresh or dried. Many people grow herbs in their gardens, in window boxes, or in pots in a sunny window. Fresh herbs are not as concentrated as dried ones. Therefore you must use three to four times as much fresh herb as dried. Unless otherwise specified, the amount of herb in a recipe is for the dried variety, not the fresh.

• *Spices* are dried roots, stems, and seeds of plants grown mainly in the tropics. They include cinnamon, pepper, and cloves. Some people confuse the word "spicy" with "hot." Only a few spices, such as pepper and ginger, produce a "hot" dish. Most spices merely give additional flavor.

• *Blends* are mixtures of dried spices and herbs, usually powdered. They are made into



Reynolds Aluminum

You can even have pizza for dessert! This one is made with cherry pie filling and crumb topping. If you don't have a pizza pan, shape one from heavy-duty aluminum foil and put on a cookie sheet.

combinations called by special names. Curry and chili powder, for instance, are blends of herbs and spices. Many manufacturers make up their own blends, such as seasoned salts.

Are you bewildered as to which herb or spice to use? Creative cooks recommend that you begin by becoming acquainted with the most popular herbs and spices and learn to use them successfully. Once you master them, you can experiment with the lesser-known ones.

Remember, each herb, spice, and blend has its own distinctive flavor. There is no wrong or right seasoning to use with each food. The one you favor will depend on your own personal preference.

Follow these guidelines for using herbs and spices.

- Store herbs and spices in a cool, dry place. Do not store them over the range or refrigerator or on a window shelf in sunlight. Heat and light destroy flavor and aroma.
- Age does not improve seasonings. Spices and herbs dry out and lose their flavor, color, and aroma. Usually, whole spices will keep longer than the ground. Date each container when you buy it. Keep it tightly closed. To test for freshness: Rub a bit of the spice or herb between your palms and breathe in the aroma. (Be care-

ful not to inhale the substance itself.) If there is no aroma, it is time to replenish the supply.

- Usually, use 1 mℓ [¼ teaspoon] of seasoning for every four servings. If you use too much, you can ruin a recipe, so start out with a small amount. Herbs and spices should produce delicate, subtle flavors and should not overpower the food.
- Cooking increases the strength of the herb and spice flavor. If a food is to cook for hours, such as stew or pot roast, add the seasonings during the last hour of cooking.
- Herbs and spices need more time to release their flavors when used in cold, uncooked food. Make up mixtures such as beverages and salad dressing ahead of time, at least an hour, preferably longer. This allows time for the flavors to blend.
- When should you *not* use an herb or spice? As a rule, one highly seasoned food for each meal is enough. A meal with every dish noticeably seasoned with herbs or spices can be a disaster instead of a delight.
- If you dislike flecks of herbs and spices floating in the food, tie them in a muslin bag before adding them. Remove the bag before serving.
- Crush leaf herbs, such as oregano, thyme, and rosemary, before adding them to food. Rub them between your palms or use a mortar and pestle to release the flavor.



Kraft Foods

A cinnamon stick is used to stir hot cocoa and marshmallows.

Let's Explore and Report

- Survey friends and relatives to find out what herbs and spices they use most frequently and in what foods. Compare with your classmates. What conclusions do you reach?
- Choose two of your favorite recipes. If you were going to experiment with seasonings, which herbs and spices would you use in your recipes? Why?

FINISHING TOUCHES

Garnishes can add color, texture, and a finishing touch to any food. *Garnishes* are decorative arrangements of edible food, used to enhance the appearance of the dish. They can be used on appetizers, salads, main dishes, vegetables, desserts, and beverages. You can use fruits, vegetables, coconut flakes, chopped nuts, or one or two leaves of fresh herbs such as mint. A cinnamon stick, for instance, is often used to garnish a hot, spicy beverage. Parsley and watercress are popular garnishes for meat dishes.

When planning garnishes, follow these guidelines:

Finishing touches . . .



Marriott Corp.

Filet mignon served on a wooden plank. The border of mashed potatoes was made with a decorating cone.



Sunkist Growers, Inc.

Foods such as citrus fruit can be cut into many different shapes to use as garnishes.

- Garnishes should be edible. Be sure the flavor of the garnish is compatible with the food on which it is served.
- Keep color in mind. The color should complement the food.
- Consider the size of the garnish in relation to the size of the food and the container. Otherwise, it may overpower the food.
- Do not over-garnish foods. Too many garnishes can give an over-done appearance, just as too much jewelry can destroy the appearance of an outfit.

You can achieve another finishing touch for food by using a cake decorating tool. Have you often admired an artfully decorated cake with graceful borders and designs? Professional chefs use the tool for many foods, such as deviled eggs, mashed potato baskets or borders, appetizers, and whipped toppings on desserts. You can do the same type of decorating. Is your first reaction, "Oh, that's only for experts. I could never do anything like that!" With a few pieces of inexpensive basic equipment and a little practice, almost anyone can get impressive results with a cake decorator.

The cake decorating tool comes in two parts—the cone and the tube. Cones can be metal cylinders or they can be plastic or canvas. Professionals prefer to make their own from parchment paper. This is a convenient method since you can make separate cones for different foods. Parchment cones are disposable so you have no cleanup. Pages 413 and 414 illustrate how to make and use a decorating cone and tube.

Decorating tubes come in plastic, brass, and nickel. The tip of the tube is cut into a certain shape. The tube fits into the cone. As the food or frosting is forced through it, a design is created. For finishing touches on food, you will need only a few basic tubes to begin with. As you gain experience, you may want to add other designs.

Where can you use a decorating tube for finishing touches? Force whipped topping through the tube to create many interesting effects on desserts. When you make appetizers, use the decorating tube to put spreads on celery, bread, or crackers. Mashed cooked vegetables can be applied with a decorating tube to garnish a dinner plate or serving platter.

Let's Explore and Report

- Select a garnish such as a radish rose or celery fan. Find instructions for making it and practice. Demonstrate to your classmates how to make the garnish.

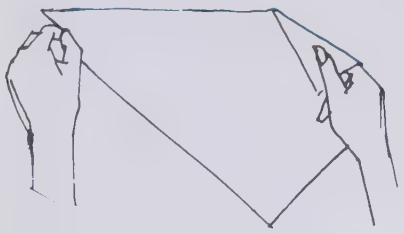
FOOD AS GIFTS

A gift of homemade food, carefully prepared and decorated, is greatly appreciated by many people.

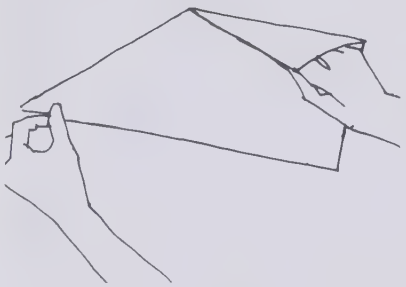
Holidays offer many opportunities for food gifts, as do special events such as birthdays, anniversaries, and graduations. However, you need not be limited to just these occasions. A gift of food can welcome a

How to make a parchment paper decorating cone . . .

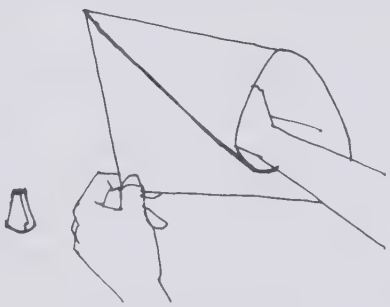
Wilton Enterprises



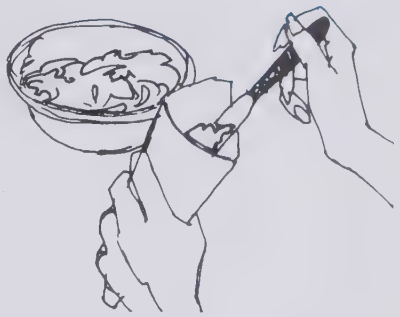
1. Lay parchment triangle flat with smallest point at bottom. With hand palm up, grasp right hand corner between thumb and forefingers and turn inward. (Thumb should be on top.)



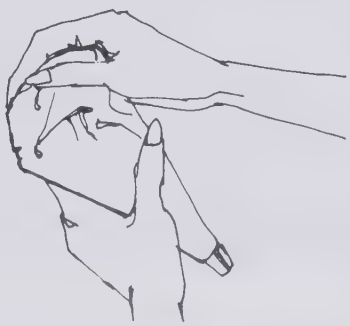
2. Roll right hand toward the center, drawing the right hand corner toward you as you roll — and a cone shape will form.



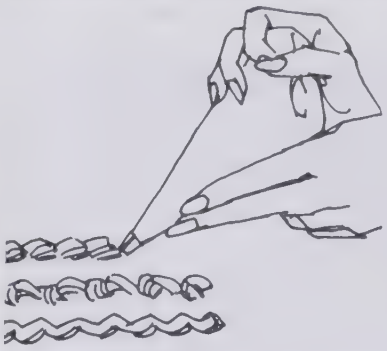
3. Then twirl left hand corner all the way around cone and move it back and forth until point of cone is needle sharp.



4. Fold top in or staple to secure. Cut tip to fit tube and drop it in. Hold cone at tip end and fill 3/4 full with spatula. More will be too hard to handle.



5. After filling, fold two top edges into "diaper fold" as shown. This prevents icing from backing out wrong end when cone is squeezed.



Borders — do most borders holding cone at 45 degree angle to the decorating surface.



Leaves — hold cone at 45 degree angle while piping out most kinds of leaves.



Drop flowers — hold cone perpendicular. Straight up or at a 90 degree angle to surface.

Wilton Enterprises

The decorating cone must be held at the correct angle for the design you wish to form.

friend home from the hospital, welcome new neighbors to the area, say goodbye to friends leaving town, cheer up someone going through a crisis, or say "I care" to someone special.

What foods make the best gifts? Baked goods rank high in popularity—breads, cakes, cookies, and pies. For gift giving, you might want to bake pies in disposable foil pans that do not have to be returned. Disposable foil pans come in assorted shapes and sizes. They make practical gift containers for any baked goods. To protect the food, wrap it in plastic so it can also be seen.

You can re-use many types of food containers for giving cookies—cottage cheese cartons, plastic juice and milk bottles cut down to the correct size, coffee cans, and wide-mouthed jars. If you have time, trim them with rick-rack, ribbon, or self-sticking paper or plastic.

Homemade jams, jellies, and candies are always welcome as gifts. A jar of spaghetti sauce or a casserole can be of great help when a family has the added burden of illness. A food gift or offering to prepare a meal can be an effective way of saying "I'm so sorry" at the time of a death or other tragedy.

When you select food for a gift, keep the person's likes and dislikes in mind. A gift is much more welcome and appreciated if it is a food the person enjoys. Avoid exotic or unusual recipes unless you are sure the person can eat them.

Making Candy

Some people consider candy making their favorite form of creative cooking. However, certain guidelines must be followed to insure successful results.

Candies are generally made by boiling a sugar and liquid mixture to a certain temperature. Some may be made without cooking, but these are generally special recipes.

Cooked candies are divided into two types—crystalline and noncrystalline.

- *Crystalline Candies* include fondant and fudge. A mixture of sugar and liquid is boiled, and the liquid evaporates. The sugar becomes concentrated so that crystals are ready to form. A candy thermometer is essential because the mixture must be cooked to a specific temperature. The mixture is then cooled and beaten rapidly to form very small crystals. If large crys-

tals form, the candy becomes grainy.

- *Noncrystalline Candies* include brittles, caramels, and toffees. The mixture is cooked to a very high temperature so crystals do not form. Also, ingredients such as molasses, vinegar, or corn syrup are added to prevent crystals from forming.

When making candy, be sure to follow recipe instructions carefully. If you take shortcuts or do not cook the mixture to the exact temperature, you are bound to have a failure.

Let's Explore and Report

- Check postal regulations. Find out what kinds of foods cannot be mailed as gifts. How should food gifts be wrapped for mailing?
- Make up a visual display of different ways cookies, breads, cakes, and pies can be packaged for gifts.

What Would YOU Do?

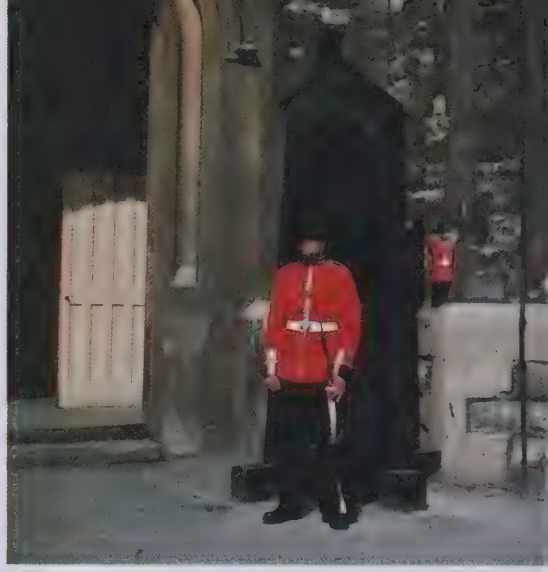
- You are planning a dinner for three guests. You wish to impress them with your cooking skills and would like to be as creative as possible.



General Mills, Inc.

Food is a welcome gift at all times of the year.

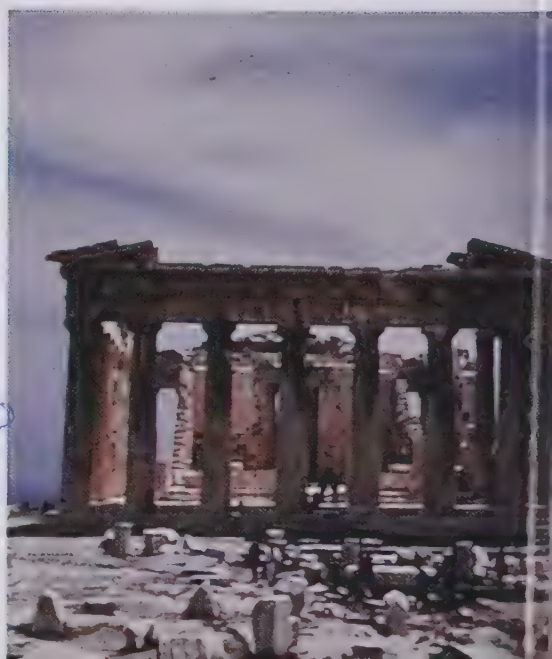












Chapter 24
Food Around the World

To help you to . . .

- **Identify the food customs of many countries.**
- **Describe some typical foods prepared in different parts of the world.**

Most countries have their own cuisine—basic foods and preparation methods. In some parts of the globe, a number of countries have common food customs because the climate and life styles are so similar. Other countries, however, have regional differences in cooking within their own boundaries.

Many international foods, such as pizza, shish kebabs, and sukiyaki, have become popular in the United States. Perhaps you have already tasted some of the foods to be discussed in this chapter.

Look for these terms
bouillabaisse
bubble and squeak
cassoulet
chutney
fish and chips
flan
haute cuisine
paella
provincial cooking

All countries have traditional foods and customs which have developed over the centuries.

GREAT BRITAIN

The British have an ample supply of beef, mutton, and pork, so the people are primarily meat eaters, with beef the favorite. Waters surrounding the island provide an abundance of seafood.

British cooking tends to be substantial but simple. Beef, for instance, is preferred boiled or roasted and served with horseradish sauce and mustard.

To make use of leftovers, British cooks long ago developed recipes such as meat pies, turnovers, and bubble and squeak. Meat pies, such as steak and kidney pie, come in different shapes—loaves, molded, or standard pie shape. *Cornish pasty* is a turnover made of pastry filled with meat and vegetables—a one-dish meal. *Bubble and squeak* is a traditional dish made of chopped cooked beef, mashed potatoes, and leftover vegetables, mashed together and fried until all pieces are brown and crisp.

Centuries ago, as did other countries, the British used spices and herbs to mask the off-flavor of meat that had lost its freshness. However, instead of seasoning the meat, they used highly seasoned sauces, either as accompaniments or as part of the recipe. Even today, these same sauces remain an important part of the cuisine for the flavor they give. Besides the horseradish and mustard mentioned earlier, chutney and Worcestershire sauce are popular. *Chutney,* a tangy relish made with fruits, herbs, and spices, is used both in recipes and as an accompaniment. *Worcestershire sauce,* also highly seasoned, is commonly used in recipes.

The most popular fish dish is *fish and chips,* sold in carry-out restaurants. Fish fillets are dipped in batter and deep fat fried. The potatoes are similar to french fries. In earlier times fish and chips were always wrapped in newspapers when sold, and this tradition continues today. The customer usually sprinkles the fish with salt and vinegar, available at the counter.

Tea is the national beverage in England, served at all meals. The English usually add milk before drinking it. One of the most famous traditions is late afternoon tea. People in homes, factories, and offices take time to have their afternoon cup of tea. Snacks are often served, such as pastries, sweet yeast breads, and cookies.

What are some of the other foods popular in Britain?

- *Fish.* Fresh fish is prepared simply to bring out its delicate flavor. *Finnan haddie* is smoked haddock, although smoked trout, salmon, and eel are also common. *Kippers* are split, salted herring.
- *Puddings.* Almost any food is used to make puddings, from meat and vegetables to fruit. Some were created to use up leftovers. Some are served plain, others with a sauce. Most are steamed or boiled, but some are baked.

At Christmas, ham and turkey are replacing the traditional roast goose for dinner. However, hot punch, plum pudding, and mince pies are still served. A dark, rich fruit cake is popular for late afternoon tea on Christmas day. It is often decorated with a white fluffy frosting and Christmas designs.

FRANCE

Most people think of French cooking as gourmet cooking. Actually, there are two distinct types of cooking in France—the haute cuisine and provincial cooking.

The *haute cuisine,* sometimes called gourmet cooking or the classic cuisine, is now found mostly in expensive restaurants and among the wealthy. Some people also practice it as a hobby. The haute cuisine originated with the master chefs who cooked for the French aristocrats before the Revolution. It was a fine art, like painting and music. The food had to be perfectly prepared and elegantly served. Master chefs planned meals carefully so textures, colors, and flavors blended. Tables were set with fine linens, silver, crystal, and china.

After the French Revolution in 1789, the chefs who had served the aristocrats had no jobs. Many of them established restaurants where they could continue their fine art of cooking. These restaurants were patronized by the bourgeoisie, or the newly rich middle class who emerged after the Revolution.

Some of the characteristics of the haute cuisine include the use of sauces, elegantly decorated dishes, and foods such as foie gras (liver paste), soufflés, aspics, and puff pastries. The recipes are exact and time-consuming. They call for the highest quality and finest food available. Sweet and sour flavors are never mixed, as they are in other countries. Except for a few salads and garnishes, foods are never served raw.

Provincial cooking offers a marked contrast to the haute cuisine. Over the centuries, each of the more than thirty provinces in France developed its own food customs.

Provincial cooking has two main characteristics. First, it is relatively simple. The foods are often cooked in a *cassoulet* or casserole in their own juices. As a result, rich sauces or complicated finishing touches are not needed. *Ragout,* for instance, is a stew made of meat, poultry, or fish, and vegetables, and thickened by the starch from the potatoes.

The second characteristic is the use of locally grown foods. As do the master chefs, the French people believe that only top-quality ingredients must be used. They claim no amount of seasoning or cooking can disguise inferior foods. Today, however, convenience foods are available in supermarkets. Many people use them but only to cut down on work and time in preparing their traditional recipes.

Other characteristics of French cooking include:

- *Fresh and Dried Herbs.* Although herbs are important in cooking, the kind used varies with each province. In some areas, foods are more highly seasoned than in others.
- *Soups.* Some soups are simple, but flavorful, such as



Oscar Mayer & Co.

The French *cassoulet* or casserole combines meat, dried beans, and vegetables in a flavorful sauce.

French onion soup. Others are hearty enough to be used as one-dish meals. One of the most famous is *bouillabaisse,* a fish soup made from lobster, three kinds of fish, eel, mussels, scallops, tomatoes, and herbs.

- *Vegetables.* Often vegetables are braised. They are also cooked in a casserole with very little water. The juices are poured over them when served.
- *Salads.* In France, the salad always follows the main course. It usually consists of greens with a simple oil and vinegar dressing. The salad is considered an appetite stimulant, to prepare the diner for the dessert to follow.
- *Desserts.* Delicacies such as flaky pastries, crepes, fruit compotes, fruit or chocolate soufflés, cream puffs, caramel custard, and fresh strawberry tarts, are often served as desserts. Cheese and fresh fruit are also popular.

SPAIN

As in many countries, cooking in Spain is regional in character, featuring locally grown foods in season.

One of the main characteristics of Spanish cooking is the richness of color:

- *Red* tomatoes, pimientoes, paprika.
- *Yellow* saffron, eggs, and lemons.
- *Green* parsley, peas, and other vegetables.

Fuel supplies in Spain are limited and expensive. Therefore foods are often combined so they all cook at once, to save fuel. *Paella,* a national dish,

combines lobster, shrimp, clams, mussels, chicken, meat, sausage, vegetables, and saffron rice. As a rule, most foods are cooked either on top of the stove or grilled over coals.

Certain foods are more common in some areas than in others. In the Basque region in northern Spain, for instance, lamb is the favorite meat. This region is excellent for raising sheep, and the Basques are world-renowned as sheepherders.

Vegetables are limited to those in season. They are usually served as the first course and not as an accompaniment to the meal. As a rule, vegetables are served cold.

Other characteristics of Spanish cooking include:

- Most main-dish recipes have tomatoes, onions, and garlic cooked in olive oil.
- The most common seasonings are saffron, cinnamon, cumin, black pepper, and cayenne, but these are used sparingly.
- *Flan,* one of the favorite desserts, is a baked custard with a caramelized sugar topping.

Let's Explore and Report

- Pretend you have invited two English teenagers to dinner with your family. Plan a menu you would serve to make them feel at home. Give reasons for your selections.
- Select two French recipes, one representing the haute cuisine and the other representing provincial cooking. Make up a poster showing the characteristics of each recipe that are typical of each kind of cuisine.
- Search through magazines and cookbooks for main-dish recipes of Spanish origin. What characteristics do they have in common?

Look for these terms

antipasto
lussekake
marzipan
minestrone
schnitzel
smorgasbord
wurst

SCANDINAVIA

The Scandinavian countries include Sweden, Norway, Finland, and Denmark.

The *smorgasbord,* similar to a buffet, is a popular method of serving food. Originally, smorgasbord meant a sandwich board. Large, open-faced sandwiches were served—combinations of meat or fish with spreads and raw vegetables on slices of hearty bread. Other foods, however, may also be offered. Several types of herring are served, along with other fish dishes, assorted cold meats and salads, and hot dishes. A popular hot dish is Swedish meatballs—tiny balls of ground meat and mashed potatoes, fried, and served in a cream sauce.

Scandinavia is noted for its assortment of hearty rye and white breads in a variety of shapes and sizes. Many are hard, dry, and flat. These recipes originated in ancient times when bread was baked in quantity to last through the long winter. Because of the short growing season, the grain had to be harvested while still green. If stored, the green grain would spoil, so enough bread had to be baked to last the winter. It was stored either in chests or hung from the ceiling. Some breads are still pierced with holes in the center, reminiscent of the days when they were hung from the ceiling.

Some of the more common foods in Scandinavia are:

- *Meat.* Pork is the most popular, along with lamb and mutton. In the far north, the natives eat reindeer meat.
- *Soups.* Most soups are thick and hearty, such as pea soup. However, light soups are made of fruits and berries.
- *Plattar (pancakes).* Scandinavians use a special frying pan to bake small, thin pancakes about 8 cm [3 inches] in diameter. They are often served for dessert with sugar and jam, or a fruit or berry sauce.

Christmas is one of the most enjoyable holidays. It gives Scandinavians an opportunity for a break in the long, cold winter. Usually they begin preparing for it at the beginning of December and continue the celebration until January 14. No matter how contemporary a life

style they have adopted, they try to maintain ancient holiday traditions, especially food customs.

Pork must be served, either on Christmas Eve or on Christmas Day. During the season, Scandinavians also serve boiled or baked ham, spareribs, pig's feet, and old-fashioned sausages.

Another traditional food is *lutfisk*—dried cod, soaked, boiled, and eaten with a special white sauce.

In Sweden, Christmas festivities begin on December 13, Lucia Day or the Feast of Light. Every home is ablaze with lighted candles in honor of St. Lucia. In the early morning, the eldest daughter in the household puts on a long, white, chiffon gown. On her head she wears a crown made of seven white candles interwoven with lingonberry leaves. She then serves the entire family coffee in bed with traditional yeast-raised buns—*lussekake* or Lucia buns.

GERMANY

German cooking has two basic characteristics. One-dish meals are common, in which vegetables and meat, poultry, or fish are cooked together. An example is beef stew.

The second characteristic is the use of fruits with meat and vegetables, along with sweet-sour flavors. For instance, apples are commonly cooked with pork. A fruit compote or stewed fruit such as cherries is often served as a meat accompaniment instead of vegetables. *Sauerbraten* is a pot roast marinated for two or three days in an acid-oil mixture and cooked in a spicy sweet-sour sauce.

- *Meat.* Pork is the most favored, although beef and veal are frequently used. The meat is either roasted or braised. Pickled meats are also popular. *Schnitzel* or cutlet is served frequently. It can be plain, breaded, or stuffed, and served with many kinds of sauces. Variety meats, especially liver, are held in high regard.
- *Sausages.* Germany is noted for its many kinds of sausage or *wurst.* Some are made only in certain regions.
- *Sauerkraut.* One of the most common foods in Germany, sauerkraut is used as part of a recipe or as an accompaniment to a meal.
- *Bakery Items.* Germany is noted for its many types of breads, each characteristic of the region in which it is made. The breads can be dark or light and come in many shapes. Sweet breads and cookies are also popular. *Stollen* is fruit bread made for Christmas. *Lebkuchen* are honey and spice cakes. *Springerle* are pale yellow cookies, shaped in molds. Perhaps you have baked some of these traditional foods at Christmas.

Fall *fests* (festivals) abound at the end of the harvest. Here, many of the traditional national foods are served.



Scandinavians make many different kinds of breads, including a hard, flat bread.

On Christmas Eve, Germans traditionally serve carp, a type of fish. On Christmas day, the main dish can be roast poultry or meat. However, apples and nuts, especially almonds, are considered traditional foods and are used extensively in cooking and baking. Cookies are baked into fancy shapes as toys for children. Examples are gingerbread people and houses.

Marzipan, which originated in the Mideast, is a paste of almonds and sugar, flavored with rose or orange water. Tinted and shaped to imitate fruits and vegetables, it has become an important part of German Christmas tradition.

ITALY

Many people think of pizza and spaghetti whenever Italian cooking is mentioned. However, did you know the Italians perfected the art of making ice cream? Arabs, who learned to



Oscar Mayer & Co.

Sausage and sauerkraut are favorite German foods.

make ice cream and sherbet from the Chinese, taught the art to the southern Italians. The Italians, in turn, introduced ice cream to the rest of Europe. Several ice cream desserts served throughout the world have Italian names such as Neapolitan and spumoni. *Neapolitan ice cream* is made of three flavors in layers—chocolate, vanilla, and strawberry. *Spumoni* is an ice cream containing fruits, nuts, or candies.

Because Italy is small and hilly, food is limited. Early cooks used pastas to stretch the food supply. By making pasta in many shapes and sizes and serving it with different types of sauces, they also added variety to meals.

Fuel supplies are also limited. To conserve fuel, food is minced, diced, or chopped and mixed so it cooks quickly.

Cooking in north and south Italy differs in two respects—the kind of cooking fat used and the shape of the pasta. The northern part uses butter for cooking and ribbon-shaped pasta made with eggs, such as noodles. The southern part uses olive oil and tubular pasta, such as macaroni and spaghetti. Generally, foods in the south are more highly seasoned than those in the north.

Pasta is served in many ways, depending on what other foods are available. It can have a simple butter or oil dressing, a light sprinkling of cheese, or a thick layer of rich sauce.

Pizza is a large, thin shell of dough filled with tomato sauce, seasonings, and other foods such as anchovies, sausage, and vegetables. It has been popular in the United States for years. It



National Broiler Council

In Italy, pasta sprinkled with parmesan cheese is often used as an accompaniment to the main dish, such as Chicken Cacciatore.

originated in Naples, where it is still made in its traditional rectangular shape.

Antipasto is another Italian food popular in the United States. It means "before the meal" and consists of assorted appetizers, such as: cheeses, pickled vegetables, fish, and salads.

Other foods commonly served in Italy are:

- *Soups.* Rich soups are popular, usually hearty enough to make a one-dish meal. *Minestrone,* for instance, is a vegetable soup with pasta.
- *Cheese.* Italy is famous for its cheeses, from the hard Parmesan and Romano, which must be grated to be used, to ricotta, similar to cottage cheese.

Let's Explore and Report

- Interview someone you know who is of Scandinavian, German, or Italian descent. What foods do they eat that are typical of the culture? Are the foods prepared the same way as they were in Europe? Explain.

Look for these terms

blintzes
borsch
couscous
felafel
kasha
moussaka
piroshki
samovar
shchi
shish kebabs

RUSSIA

In the early days of Russia, the peasants were desperately poor. Out of the meager food supply, they created dishes that are still the backbone of Russian meals.

- *Black Bread* is made of assorted whole grains. The bread is dark, heavy, moist, and flavorful. Russians consider bread an essential food and not a side dish or accompaniment to a meal. It is always sliced thick and spread heavily with butter.
- *Kasha* is cooked whole grain, usually buckwheat. Sometimes meat or egg is added.
- *Cabbage Soup* or *Shchi* is made with fresh cabbage in the summer and sauerkraut in the winter. Other foods such as vegetables, sausage, and meat are added, depending on what is available.
- *Borsch* is a soup made from beets. It can be a thin consomme or a hearty meal with meat and other vegetables. It is served hot or cold, and usually with a generous helping of sour cream.
- *Piroshki,* shaped like long fingers, are made of pie crust dough filled with meat, fish, eggs, or vegetables. A *pirog* is a large, rectangular turnover filled with meat, vegetables, or fish.

Besides the basic foods, the Russians adopted foods from other countries, such as rice pilaf and skewered meat or kebabs from Turkey. Catherine the Great imported French chefs to serve in her court. One of the delicacies they prepared was crepes. The Russians fill them with a tender creamed cheese mixture, top them with a fruit sauce, and call them *blintzes.* Wars and alliances brought influences of German, Polish, and English cooking. Tea is the national beverage of Russia, but it retains its Chinese name. In Chinese, tea is *ch'ai.* In Russian, it is *tchai.*

Serving tea in Russia is a ritual. A *samovar* is used—an urn with a spigot, filled with water and heated by charcoal. Modern samovars, however, are heated by electricity. Strong tea, called the *essence,* is kept in a teapot on top of the samovar. To make tea of the right strength for drinking, the essence is poured into the cup, which is filled with hot water from the samovar.

Supermarkets in Russia, especially in larger cities, offer convenience foods, such as borsch and piroshki. Some are ready to eat while others are semi-prepared.

Easter has been the most important traditional holiday, marking the end of winter and the beginning of spring. Hand-painted eggs are symbols of new life, while traditional foods such as paska and kulich are still served. *Paska* is sweetened cottage cheese, butter, almonds, raisins, and candied fruit, mixed and poured into a pyramid mold. The mixture is weighted



Fleischmann's Yeast

Many countries enjoy special breads at Easter. Babka (upper left) is popular in Poland and Czechoslovakia. Kulich (upper right) is a common Easter bread in Russia. Italians and Swiss prepare a coffee cake with colored eggs imbedded in the dough.

down so excess liquid seeps out and is then unmolded. A *kulich* is a sweet yeast bread with fruits, nuts, and raisins, baked in a tall, narrow pan about 30 cm [12 inches] tall.

NEAR AND MIDDLE EAST

Most countries in this area have several common characteristics in cooking.

Herbs and spices are an essential part of each cuisine. However, the kinds used vary in each country.

Except in Greece, which is Christian, little pork is served in these countries. Lamb is the staple meat since there is not enough pastureland for cattle. Camel and goat are also popular. The most common method of preparing meat is to roast it. Often animals are roasted whole. *Shish kebabs* are also popular. Meat is cut into cubes, placed on skewers or metal rods, and roasted over an open fire.

Another popular dish is prepared with a ground meat mixture combined with rice, herbs, and spices, and wrapped in leaves or stuffed into a vegetable. The mixture can be



American Lamb Council

Shish kebabs—cubes of lamb and vegetables cooked on a skewer—are popular in the Near and Middle East.

wrapped in grape or cabbage leaves or stuffed into eggplant or green peppers.

Eggplant is one of the most common vegetables in the region. It is mashed, stuffed, or cut into cubes or slices or mixed with other foods. It can be baked or fried. One of the important eggplant dishes is *musakka'a* (Arab) or *moussaka* (Greek). It is made of fried eggplant slices and well-seasoned ground meat. These are arranged in layers with a sauce and baked. The sauces and seasonings vary with the regions.

Other popular foods include yogurt, cheese, chicken, fish, olives, olive oil, wheat, rice, beans, lentils, and chickpeas. *Bulgur* or whole wheat may be added to other foods and often is used as an accompaniment. Rice is served with herbs or tomatoes. *Felafel* is a favorite dish. It is made with ground chickpeas mixed with spices, shaped into balls, and deep fried.

In North Africa, one of the staple foods is *couscous,* made of finely ground wheat mixed with salt and water and steamed. It can be served as a main dish if topped with a meat sauce or as a sweet if topped with sugar and nuts.

Sweets are usually made of dried fruits and nuts in paper-thin pastry or *filo.* Flavorings often include rose or orange water, made from the flower petals. Sweets are reserved for holidays and social visitors. Usually, fruit is served for dessert.

- *Greece.* Since most Greeks are Eastern Orthodox Christians, they have numerous fast days. On these days, Greeks avoid eating any animal products such as milk, butter, cheese, meat, eggs, and fish. Bean and lentil soup is popular on fast days. Easter and Epiphany are the most important holidays. At Easter, the traditional bread is a thick, round loaf decorated with hard-cooked eggs dyed bright red. *Feta cheese,* a national food, is a white, flaky cheese made from sheep's milk.

Let's Explore and Report

- Select two countries in the Near or Middle East. Research the food customs in both countries. Point out the similarities and differences. If possible, give reasons for the differences.
- Plan a food-tasting party featuring Russian dishes. What foods would you serve? What kind of table decorations would you have?

Look for these terms

berbere
braaivleis
cassava
curd
curry powder
injera

AFRICA

The Sahara desert, which extends from east to west, divides the northern part of Africa from the rest of the continent. As a result, the life styles and food customs of the North Africans are more similar to those of the Mideasterners than to those of the people living south of the Sahara. Thus only the area south of the Sahara will be included in this discussion.

Most of Africa is in the tropical or subtropical climate belt. However, it has many kinds of land features, from mountains, tropical rain forests, and deserts to coastlines and river valleys. Extremes in climate make agriculture difficult in many areas. As a result, a great diversity exists in the kind of food available. In addition, foreign colonists have greatly influenced the cuisine in some areas.

Foods throughout Africa tend to be heavily spiced, especially with red hot pepper. In western Africa, legend has it that a wife showed the amount of her love for her husband by the amount of red pepper she put in the food. If the food began to get a little bland, it meant the wife's affection was waning.

South of the Sahara, Africa can be divided roughly into three areas—east, west, and south.

- *East Africa.* Millet meal, sorghum, poultry, curds and whey, and cornmeal are the most common foods. Little or no meat is eaten, except in Ethiopia. In other east African countries, cattle, sheep, and goats are regarded as a form of

Stuffed Cabbage Rolls

Metric		Ingredients	Customary
Weight	Volume		
—	3.8 ℓ	Water	4 quarts
8	8	Large cabbage leaves (or 10–12 medium size)	8
454 g	480 mℓ	Ground beef	1 pound
60 g	120 mℓ	Instant rice	½ cup
1	1	Egg, slightly beaten	1
—	60 mℓ	Milk	¼ cup
60 g	120 mℓ	Diced celery	½ cup
60 g	80 mℓ	Diced onion	⅓ cup
6 g	5 mℓ	Salt	1 teaspoon
1 g	1 mℓ	Ground pepper	¼ teaspoon
6 g	30 mℓ	Dry sweet pepper flakes, crushed	2 tablespoons
305 g	1 305 g can	Condensed tomato soup	1 10¾-oz. can
—	180 mℓ	Water	¾ cup
55 g	60 mℓ	Butter or margarine	¼ cup

Temperature: 177 °C [350° F.]
Yield: 6–8 servings
Baking pan: 2.8 ℓ [3-quart] casserole
Pour water into large pot and bring to boiling. Put cabbage leaves in water. Cover and remove from heat and let stand to soften leaves.
Brown meat in skillet.
Remove from heat.
Add rice, egg, milk, celery, onion, salt, pepper, and pepper flakes. Mix well.
Remove cabbage leaves from water.
Drain well.
Use sharp knife to slice off part of thick vein so leaf can be folded more easily.
Place about 120 mℓ [½ cup] of meat mixture on each large cabbage leaf. Use smaller amount on smaller leaves.
Fold thick-veined part of leaf over, tuck ends over, and roll over to close.
Place with loose end down in 2.8 ℓ [3-quart] casserole.
Combine soup and water.
Pour over rolls.
Dot with butter or margarine.
Cover.
Bake at 177 °C [350° F.] for 1 hour.

wealth rather than food. However, milk from cattle is used. Many people also draw blood from cattle to use as food. Cooking has been strongly influenced by both the Mideast and Far East. Curried foods, chutney, rice, and fish are popular. In the cities, English and French influence is noticeable in the cuisine. *Ethiopia,* on a high plateau in eastern Africa, is isolated from the rest of the continent and has developed its own culture. The people are devout Christians and have many religious holidays, which call for fasting about 200 days of the

year. Because of the abundant grazing land for cattle and sheep, meat is a common food. *Berbere* is a hot pepper seasoning used as an ingredient or as a sauce for meat. Although there are many variations, it is generally made with red and black pepper, salt, ginger, onion, garlic, cloves, cinnamon, nutmeg, cardamom, and coriander, ground and mixed with water to form a paste. The staple of Ethiopia is *injera,* a large pancake-like bread made from ground millet and cooked on a griddle.

- *West Africa.* Some of the common foods in this area include yam, corn, peanuts, plantains, black beans, and bananas. *Cassava* or manioc, a staple food, is the same tuber from which tapioca is made. It is ground into flour. Fish are common in this area as are giant forest snails and chickens. Beef and mutton are scarce. Stews and other dishes are often thickened with purees of yam, sweet potatoes, black beans, plantains, or grated coconut. Peanut sauces are served with chicken, while coconut is often used to accompany a main course.
- *South Africa.* This area has the best grazing and crop lands south of the Sahara so the people have an abundance of meat, poultry, fruits, and vegetables. The oceans provide an ample supply of seafood. The area was settled primarily by the Dutch, who left a lasting imprint on the food habits, as did other Europeans and Asians. A highly spiced hamburger is popular. It is either made into patties or used to stuff cabbage leaves. Curried dishes are common. Ostrich eggs are prized as food since one egg can make an omelet large enough to feed about a dozen people. One of the favorite methods of cooking is a *braaivleis,* the South African version of the outdoor cookout. Foods served include beef, lamb, sausage, vegetables, and corn pudding.



West Bend

Stuffed cabbage—ground meat with rice and seasonings, wrapped in cabbage leaves and cooked in a tomato sauce.

Squash dry on a rooftop in Greece.







Blue Goose

Bananas (left) and plantain (right) are popular foods in many tropical countries.

INDIA

Although great variations exist in food customs in different regions, there are some national similarities. Fuel is at a premium, so foods are usually cut up into small pieces or marinated to shorten the cooking time.

Curry powder is the basic seasoning. It is a combination of cloves, cardamom, chili peppers, cinnamon, mace, cumin, and ginger. However, cooks usually make their own blends, pounding the spices on a flat stone and then mashing them in a mortar. A curry is served with rice and a number of accompanying side dishes such as chutney and coconut flakes.

As in many other poor nations, cereals are the mainstay of the diet, with rice the staple food. Ghee is the most common cooking fat, but mustard, coconut, or sesame oils are used in different regions. Milk and milk products are common foods. Yogurt, called *curd,* is a favorite.

Let's Explore and Report

- Plan a reception for several people from western Africa. What foods and beverages would you serve? Give reasons for your selections.
- Study authentic recipes for Indian curries. What accompanying dishes are served? Make up a menu for a curry dinner by cutting pictures from newspapers and magazines, showing a curry dish and its accompaniments.

Look for these terms

bird's nest soup
Mongolian hot pot
sukiyaki
stir frying
tempura
thousand year eggs
wok

THE ORIENT

Although food customs in this area have certain common characteristics, there are also some marked differences.

Fuel supplies in the Orient have always been limited so recipes were designed to cook quickly. Food is cut into small pieces so it can cook in a matter of minutes. As a rule, the prepreparation takes much longer than the cooking. Food is cut into specific shapes—cubes, slices, diamonds, and angles. Shapes are essential to even cooking, harmonious blending of flavors, and visual appeal.

The secret to Oriental cooking is to have everything cut and ready before you start to cook. Then you can cook without interruption and give attention to the precise timing needed. The food should be cooked just enough so it is not raw and not completely cooked, but hot throughout.

In most areas, the main cooking utensil is the *wok,* a metal pan with a rounded bottom. It stands in a metal ring and has a cover for steaming. The method of cooking in a wok is called *stir frying.* It resembles sautéing, but the food does not soak up as much fat nor does it get as well done. The shape of the wok allows the food to cook quickly without spilling oil over the sides.

Oriental cooking is low in fat and calories. Although meat is used, it is expensive so it is used only in small quantities and mixed with many vegetables.

Rice is the staple of the Orient. Soybeans are common, made into different products—

bean curd which tastes like a mild cheese, milk, and sprouts. They are also used to make soy sauce, a characteristic flavor in Oriental cooking.

Orientals eat their food with chopsticks or *phai-tzi*. When food is in very small pieces, like rice, the chopsticks are used with a scooping motion. When eating rice, it is proper to hold the bowl close to the mouth.

China

The main ingredients in Chinese cooking are bean sprouts, bamboo shoots, water chestnuts, snow peas (green pea pods), fresh vegetables, and soy sauce. Pork, poultry, and fish are used but in small amounts. Balancing flavor, color, and texture is extremely important. In some areas, foods are more highly seasoned than in others.

Because food supplies have been limited through the ages, the Chinese have proved their resourcefulness by developing delicacies out of oddities. Certain birds, for instance, spin a gelatinous material with their saliva to coat their nests. The Chinese use the gelatinous substance to make *bird's nest soup.*

Thousand year eggs are made by wrapping raw duck eggs in a certain form of clay for a few weeks. The eggs coagulate and turn to jewel-like tones of blues and greens. The eggs are very rich, so a small portion, such as half an egg, is enough to eat at one time.



Corning

A great deal of pre-preparation is involved in cooking Oriental recipes. Food is cut into specific shapes and sizes so it cooks evenly in a short time.

Mongolian hot pot is similar to a beef fondue, but the food is cooked in broth rather than in fat. The pot of hot broth, heated with coals, is set in the center of the table. Each person holds a small piece of chicken, meat, fish, or vegetable with chopsticks or in a skimmer and cooks it in the hot broth. The food is dipped in a sauce and eaten. At the end of the meal, noodles are dropped in the broth, which is served as a soup. In China, soup

A wok is a metal pan with a rounded bottom. It stands in a metal ring and has a cover for steaming. It is a popular utensil in the Orient.





Oscar Mayer & Co.

Bean sprouts, rice, fresh vegetables, and soy sauce are common ingredients in Chinese recipes. American versions of Chinese foods, such as Chinese Pepper Strips, use these ingredients.

is generally served at the end of the meal.

The Chinese serve very few sweet foods. Dessert, if any, is usually fruit in season.

Chinese New Year is the most popular holiday. It occurs in either January or February, depending on the phase of the moon, much like the Christian Easter. It is a combination of Christmas, New Year's, and the first day of spring. The celebration lasts many days and includes feasts, gifts, wishes for good fortune and happiness, fireworks, and parades. Food is extremely important at this time. How well people eat during this holiday is considered a sign of how well they will eat for the rest of the year. A nine-course dinner is usually served since the Chinese consider nine a lucky number.

Japan

Rice, fish, soy sauce, eggs, chicken, and shrimp, along with vegetables and seaweed have been the most common foods in Japan for centuries. Recently, however, food habits have become Americanized, especially in the cities. Steak, fried chicken, and hamburgers are becoming popular. Japanese are also drinking more cow's milk.

In traditional villages, however, most people are largely vegetarians, with fish and sometimes chicken eaten on special occasions. Pigs are raised for sale to city dwellers. Cows are used only as work animals on the farms, and cow's milk is still considered dirty.

Meat-vegetable combinations cooked in the wok, such as *sukiyaki,* are popular. Another specialty is *tempura,* shrimp dipped in a batter and deep fat fried.



Mongolian hot pot. Each person holds food either with chopsticks or in a skimmer and cooks it in broth in the pot.

Let's Explore and Report

- Search for a recipe for Mongolian hot pot. Make up a menu for a dinner, based on this recipe. What electric appliance would you use to keep the broth at the proper temperature? What advantages, if any, does this recipe have over a beef fondue?

Look for these terms

cabrito
enchilada
frijole
masa
mole poblano
sofrito
sopa seca
taco
tamale
tortilla
tostado

MEXICO

Mexico has a wide variety of cuisines, a combination of native customs and foreign influence.

Masa—ground dried corn—is the basic ingredient of traditional cooking. It is used for making tortillas, tamales, and other foods. Although it is sold commercially, people in remote areas still make it by hand from dried corn.

Many of Mexico's traditional foods have become popular in the United States. Tortilla, the bread of Mexico, is a round, flat pattie made of masa dough and baked on a griddle. It is often wrapped around a piece of food or used as a scoop for eating other foods. A *tostado* is a tortilla fried crisp and filled with cheese, ground meat, mashed beans, and diced tomatoes. *Tostaditas* are wedge-shaped pieces of tortilla fried crisp and served as an appetizer or accompaniment. *Tacos* are folded tortillas, filled with hot meat or chicken, shredded lettuce, taco sauce, cheese, and diced toma-

Tortillas

Metric Weight	Metric Volume	Ingredients	Customary
240 g	480 mℓ	Masa harina (instant masa)	2 cups
—	240 mℓ	Water	1 cup

Yield: 12 tortillas
Pan: Griddle

Combine masa and water in a medium-size bowl. *Knead* to blend well. If necessary, add a little more water to make dough hold together. Mixture may appear dry, but it is quite workable. It should be the consistency of modeling clay.

Divide dough into 12 parts and form into balls. *Roll out* or press each ball between two sheets of waxed paper or pat out by hand. Form a 15 cm [6-inch] circle.

Bake on a lightly greased, hot griddle until lightly browned.

Turn and bake on other side until lightly browned.

toes. *Enchiladas* are tortillas dipped in a sauce, lightly fried, filled, and rolled. *Tamales* are corn husks spread with masa, wrapped around fillings, tied, and steamed.

Frijoles or beans are second to corn in importance in Mexican cooking. Refried beans are mashed cooked beans which are fried in hot fat. At serving time, the beans are fried again. Rice is third in importance to corn and beans and is used with many foods.

Mexicans serve regular soups as well as dry soup, *sopa seca*. Dry soup is similar to a casserole and is made with rice, pasta, or tortillas and soup stock, cooked until the soup is absorbed.

Not all food in Mexico is spicy hot. In many areas, the food is only mildly seasoned.

Mexicans use a wide variety of sauces with their food. The most famous sauce is *mole poblano,* served traditionally with turkey. It includes tomatoes, chili, fruit, and seasonings, but gets its subtle flavor from a small amount of chocolate.

Christmas is one of the most important holidays. It begins on December 16 and ends nine days later on the 24th. Fiestas and processions are held, with the most spectacular on Christmas Eve.

CARIBBEAN ISLANDS

Sunshine, pleasantly warm weather, and adequate rainfall combine to produce an abundance of fresh fruits and vegetables in this area. The oceans provide an ample supply of assorted seafood. Although plantain is the staple food, rice and beans are also common.

In Puerto Rico, for instance, rice and beans are eaten together at the same meal. They are served at least once a day. Workmen prefer hot lunches and often carry them in a *fiambrera*—three shallow enamel pans are stacked up to make a tripledeck lunch pail. The typical lunch consists of hot rice, beans, stewed meat, and tomatoes.

In Cuba, black beans are the favorite. They are usually served with rice, although both are cooked separately. However, in some dishes, rice and beans are cooked together.

Plantain is roasted, fried, boiled, or baked. It can be candied like sweet potatoes, used in casseroles with meat, or stuffed with cheese and meat filling. Peanuts are also common in cooking as are coconut and molasses.

Sofrito, a zesty combination of seasonings, is used in many



Institute of Texan Cultures

A young Mexican shapes tortillas during an ethnic festival.



Blue Goose

Tropical fruits such as papaya (top) and mango (bottom) are abundant in the Caribbean Islands.

dishes. Although regional variations occur, it is made of tomatoes, green peppers, onion, garlic, coriander, and oregano, cooked in pork fat.

Other common foods in the area include chicken, pork, eggs, and fish.

Food served on an island is influenced by the early settlers. In Haiti, French cooking predominates. In Barbados, British customs prevail. In Puerto Rico and Cuba, the Spanish influence dominates.

Let's Explore and Report

- Prepare a menu for a Mexican fiesta. What kind of decorations would you use?
- Select an island in the Caribbean. Research the food habits. Prepare a visual display, showing some of the favorite dishes and cooking methods used.

What Would YOU Do?

- A young couple from India move next door to you. Soon after, the young wife comes to you for help. She cannot find the foods that she and her husband are accustomed to eating. She does not know where to shop or what to serve.



Chapter 25
Regional Foods in the United States

To help you to . . .

- **Identify the food customs in different regions of the United States.**
- **Understand how regional food customs developed.**
- **Compare the typical foods characteristic of regional cooking.**
- **Analyze why regional foods can change from time to time.**

Fried chicken. Baked beans. Barbecued beef. Ham hocks and greens. Apple pie. Do you consider these foods typical of "American" cooking? Most people do. However, each of these foods originated in a certain part of the United States and for years was known only in that region.

Look for these terms
barbecued beef
chili con carne
filé
gumbo
hush puppies
johnny cake
kaffeeklatsch
luau
red flannel hash
sourdough
succotash

Colonial Williamsburg
In eighteenth-century Virginia, food supplies were abundant. This hearty meal includes fish, pork chops, puddings and pies, cheese dishes, and molded Sally Lunn bread.

FOODS OF THE AMERICAN INDIANS

When the early settlers reached America in the 1600s, they landed on the wild, forbidding Atlantic coast. Accustomed to the rich, fertile fields of England, the immigrants would probably not have survived had it not been for the help they received from the natives—the American Indians.

Some of the most widely used foods in the United States today are of American Indian origin. Classic American dishes, such as corn, pumpkin, squash, barbecued meat, steamed shellfish, succotash, spoon bread, cranberry sauce, roast turkey, and maple sugar, were introduced to the immigrants by the Indians.

Most Indians regarded corn as a gift from the gods, to be treasured and surrounded with ceremony. Without corn, early colonists as well as pioneers moving westward may have starved.

Indians used a number of methods for cooking their food, depending on the tribe and location. Archaeological excavations at the Koster site in southwestern Illinois show that, as far back as 6,000 years ago, Indians in the area roasted whole reindeer on a spit over a huge campfire. In cold regions where a food supply had to be preserved for the winter, foods were dried, frozen, or smoked.

The Indians had learned to live in harmony with nature.



Archaeological excavations show that 6,000 years ago, Indians roasted whole reindeer on a spit over a huge campfire.

Thus they relied on nature's bounty and lived by hunting, fishing, and picking wild berries and fruit. They knew how to use local seeds, roots, flowers, and grasses for seasoning. Some tribes became agriculturists and grew crops such as corn, squash, pumpkin, and beans.

Regional varieties in climate and type of soil created vast differences in the types of food available to the Indians.

In the Southwest, the Pueblo tribes, the Papagos ("Bean People"), and the Hopis grew peppers and beans. They used these for dishes similar to chili as well as for soups. They also made barbecue sauces for meat roasted over open fires.

In the Northwest, seafood was the staple. Tribes such as the Tlingit, Kwakiutl, and Salis found an abundant supply of fish, especially salmon, and shellfish in the Pacific Ocean and inland rivers. They steamed the seafood or baked it over an open fire.

Wandering tribes of Sioux and Cheyenne in the vast midwestern plains roasted buffalo over campfires. They also considered corn as a staple food.

Cherokees and other tribes in the southern part of the country prepared many kinds of soups and rich stews from the abundant supply of small game, fowl, and fish. They also baked corn breads, some similar to those prepared today.

In the Northeast, tribes such as the Iroquois, Narragansetts,

and Powhatans raised corn, beans, squash, and pumpkin. They fished, hunted, and gathered fruits and berries.

Thus thousands of years before the first immigrants reached the western hemisphere, the native Indians were preparing foods that were to become the foundation of American cooking.

FOOD TRADITIONS OF THE IMMIGRANTS

When early immigrants arrived in the seventeenth and eighteenth centuries, they brought with them the cooking traditions of their homelands. With the help of the Indians, they combined these methods with locally available foods to develop regional cooking. English, Dutch, Germans, and French settled in the Northeast; English and Africans in the South; French, Spanish, and Africans in Louisiana; and Spanish in the Southwest.

Later groups of immigrants had a marked influence on regional cooking patterns. In the nineteenth and early twentieth centuries, people from Europe and Ireland came to the United States, the land of opportunity. They sought areas with climate and land similar to their native countries. Scandinavians, for instance, tended toward the cooler climates of the northern states such as Minnesota, Wisconsin, Iowa, and Illinois. Those from warm coastal countries preferred areas such as the Southeast and California.



Institute of Texan Cultures

Members of the Dutch community in San Antonio, Texas, prepare their booth for an ethnic festival.

Strangers in a vast new world, the people from each country tended to cluster together, whether in small towns or large cities. To survive, they had to learn the language and adopt the dress and social customs of their new homeland. However, they could retain their ethnic identities by continuing to practice their native food customs within their own groups. Ethnic groups made a deep impression on the food habits of the area. Even today, many towns and sections of cities may feature certain types of ethnic foods.

FOODS OF THE NORTHEAST

At first, early settlers in the Northeast lived off the bounty of the land. Friendly Indians taught them to hunt and to use available foods—seafood, deer, rabbit, wild turkey, and fruits.

When the settlers had cleared enough land for farming, the Indians showed them how to plant the native crops—corn, beans, squash, and pumpkin. Corn was planted in a small hill, with a small fish in each one as



California Dry Bean Advisory Board

Boston baked beans, a traditional food in the Northeast.

fertilizer. As soon as a small corn stalk formed, beans were planted to climb on the growing corn, with squash and pumpkin vines in between.

At harvest time, the Indians taught the settlers how to cook the locally grown foods. For instance, they made *succotash* by cooking beans and corn together.

Shellfish were cooked by digging a hole, building a fire, and heating rocks. The heated rocks were covered with seaweed. Over this were placed layers of shellfish and seaweed. Damp seaweed and red hot stones produced steam to cook shellfish. This was the beginning of the New England clambake, still popular today.

To last the long, cold winter, foods were dried, preserved, or salted. Dried sweet corn was ground into a meal, used for breads, puddings, pancakes, and breading fish. Cornmeal mush was a colonial favorite. Made with cornmeal and salted boiling water, it was baked into a cake. Because it kept well, it was a favorite food of travelers, who carried it with them to eat on their journeys. Thus it was called "journey cake," but over the years the name gradually changed to *johnny cake*.

The Indians also showed the settlers how to cook dried beans by soaking them overnight, then cooking them slowly in an earthenware pot for ten or twelve hours. Other ingredients were added by the settlers, and

the recipe became known as Boston baked beans.

A huge fireplace, usually taking up one wall, was the center of the early American home. It provided heat for cooking, warmth for the family, and a friendly place for family and friends to gather on cold winter days. Iron hooks in the fireplace kept cooking pots at the proper height.

Although the settlers used locally available foods and the recipes taught them by the Indians, they also brought with them the food customs of their homelands. Thus the boiled dinner, cooked for hours in an iron pot hanging in the fireplace, was one of the most popular foods of the early English settlers. It was made with fish, poultry, or meat, and turnips, carrots, potatoes, cabbage, and beets.

Because of the limited food supplies, the settlers were frugal, so leftovers from the boiled dinner were served the next day. The meat and vegetables were ground together and fried in a skillet until crusty. However, the beets turned all the other foods red. Because the color reminded the settlers of the red flannel underwear they wore in the bitter-cold winters, they named the leftover dish *red flannel hash*.

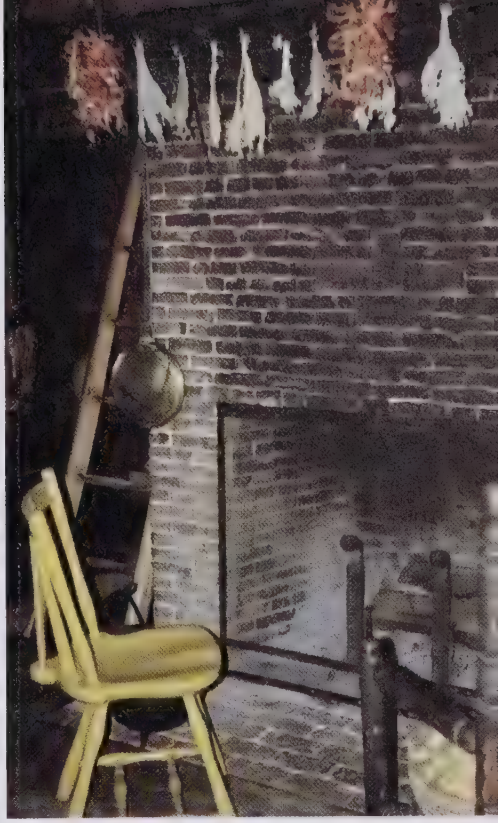
Chowders—thick soups made with vegetables, fish, and meat—bubbled for hours in iron pots. Hearty and satisfying, they frequently served as the main dish. Although corn, oyster, and lobster chowders were popular, the most famous was clam chowder. In New England, it was made with milk, butter, onions, and clams. In other areas, however, it was made with tomatoes. A great controversy arose as to which was the better method for making chowder—with milk or tomatoes. Even today, you may hear Easterners debate the merits of New England clam chowder made with milk and Manhattan chowder made with tomatoes.

Herbs were commonly used, with sage, rosemary, and thyme the most popular. Dill, caraway, fennel, lemon balm, mint, and rose petals were also frequent ingredients in recipes.

Pennsylvania Dutch Cooking

Although they settled in the East, the cooking of the Pennsylvania Dutch bore little resemblance to that in nearby areas. These early settlers in southeastern Pennsylvania were German, or Deutsch. However, the English colonists pronounced the word as "Dutch," and so the German settlers were named *Pennsylvania Dutch*.

The immigrants learned just enough English and combined it with German to create an interesting language of their own—Pennsylvania Dutch. Even today, many residents in the area still speak this language.



The fireplace, the center of the early American home, was used for both heating and cooking. Bunches of herbs were hung from nearby rafters to dry, giving the room a pleasant aroma.

The Pennsylvania Dutch had been successful farmers in their homeland, so they applied the same principles in the New World. The soil was rich and fertile, and soon the immigrants had an abundant supply of crops.

Familiar German foods such as pork and sauerkraut were the mainstay of the diet. Hearty, rich soups, served with breads, often made up the main meal. Since the farmhands labored long hours, the meals had to be filling and satisfying. Besides meat and vegetables, pancakes,



California Dry Bean Advisory Board
California Milk Advisory Board
Chowders were popular among early settlers in the Northeast.

waffles, dumplings, fritters, cakes, and pies were served at the main meal.

Housewives spent hours baking cakes, pies, buns, and crumb-topped coffee cakes. They enjoyed sharing their baked goods with neighbors over mid-morning coffee, the *kaffeeklatsch*.

The most famous Pennsylvania Dutch pie is *shoofly pie*, flavored with molasses. Although it is called a pie, it is a pastry crust with a cake-type filling.

The Pennsylvania Dutch are most famous for their seven sweets and sours. Each meal had to have seven sweets and sours, in addition to the other foods. These sweets and sours were usually pickled, canned, or preserved foods, such as spiced peaches, watermelon rind, and apple butter.

Let's Explore and Report

- Compare the food customs of the early English settlers in the United States with those of people in England. What were the similarities? Explain the reasons for the differences.

MIDWESTERN FOODS

As the pioneers moved westward in the eighteenth century, they began to open up new lands in the Midwest. In the nineteenth century, the march westward was joined by immigrants from Europe. They colonized areas in the Midwest and turned prairie lands into successful farms and dairies.

The immigrants adapted their native recipes to the foods available, often combining them with local recipes. Thus a new, complex type of cooking developed, sometimes difficult to define. It blended the customs of the eastern states with the food available from the prairies and with Old World traditions.

Corn was one of the main foods of the Midwest. The early settlers relied on it for survival. Later, the people developed hundreds of different ways of using corn, depending on the other foods available. Today,

corn is still one of the basics of midwestern cooking.

As farms developed, wheat became the major crop. Milled into flour, it gave midwestern homemakers a basic ingredient for baking, always in abundant supply.

Because the area was predominantly rural, cooking was simple but substantial. It relied on home-grown crops and farm animals. Beef and pork, dairy foods, fruits and vegetables, and home-baked breads, cakes, and pies became the backbone of midwestern cooking. Where lakes and rivers were bountiful, an abundant supply of fresh fish added variety to the meals.

Within the Midwest, certain areas developed their own specialties because of the foods available. In the Great Lakes region, for instance, whitefish was a popular food. Catfish was served frequently along the Mississippi River. In addition, ethnic influences also created a special cuisine. German cooking was prominent in cities such as Milwaukee and St. Louis. In Detroit and Cleveland, large groups of immigrants from Poland, Italy, and Southeast Europe made their impact on the eating habits of the area.

Let's Explore and Report

- Research the settlement of the Midwest by immigrants in the eighteenth and nineteenth centuries. Where did large ethnic groups tend to settle? Select one of the areas settled predominantly by one group and describe how the group influenced local food habits.

FOODS IN THE SOUTH

Primarily rural, southern living was based on the plantation. Although the area was settled mainly by the English, food customs were also influenced by the French, Africans, and Spaniards.

Warm temperatures and rich soil combined to give the settlers an abundant year-round supply of crops. Rivers provided catfish, bass, trout, and perch, while coastal waters supplied oysters, shrimp, crabs, and crayfish. Settlers hunted in the woodlands for wild game—duck, goose, partridge, turkey, and deer.

As in other areas, corn was the most prominent food. Dried and ground, it was made into many different foods. Corn bread was a favorite. Spoon bread was crisp on the outside, but soft inside so it had to be eaten with a spoon. Grits were often served with breakfast. This custom continues today. In many southern cities, an order of scrambled eggs for breakfast is automatically served with grits.

Brunswick stew was one of the most popular dishes in southern cooking, but the recipe varied with the area. Originally, it was made with small game animals such as squirrel and rabbit, stewed with vegetables, including corn. Pork, beef, or chicken was often substituted for the game or combined with it.

Greens were another important food in southern cooking. African cooks on the plantations prepared turnip and dandelion greens and other vegetables with pork fat or ham for added flavor. They also introduced okra, which was a common vegetable in their homeland.

Hot breads, sweet potatoes, and pecans were also popular in the South.

Two specialized types of cooking developed in the South—Creole and Soul.

Creole Cooking

Creole cooking is typical of Louisiana, especially New Orleans. It combines the food habits of four cultures—French, Spanish, American Indian, and African.

The French contributed many of the cooking techniques, including their love of delicate pastries.

The Spaniards introduced the use of spicy foods as well as tomatoes and green peppers. They also brought their method of cooking mixtures of meat, poultry, and fish together with rice.

Apple Pie

Metric		Ingredients	Customary
Weight	**Volume**		
230 g	480 mℓ	All-purpose flour, sifted	2 cups
6 g	5 mℓ	Salt	1 teaspoon
130 g	160 mℓ	Shortening	⅔ cup
—	75–105 mℓ	Water	5–7 tablespoons
720 g	1.4 ℓ	Sliced apples (6–8 medium apples)	6 cups
145 g	180 mℓ	Sugar	¾ cup
15 g	30 mℓ	Flour	2 tablespoons
3 g	5 mℓ	Grated lemon rind	1 teaspoon
3 g	5 mℓ	Ground cinnamon	1 teaspoon
1 g	1 mℓ	Ground nutmeg	¼ teaspoon
Dash	Dash	Ground mace	Dash
30 g	30 mℓ	Butter or margarine	2 tablespoons

Temperature: 205 °C [400° F.]
Yield: One 23 cm [9-inch] pie
Baking pan: 23 cm [9-inch] pie pan
Mix together flour and salt.
Cut in 80 mℓ [⅓ cup] shortening until the mixture is the texture of fine cornmeal.
Cut in remaining 80 mℓ [⅓ cup] shortening until particles are the size of small peas.
Add water gradually, mixing with a fork until mixture forms a ball.
Cover dough and refrigerate while preparing filling.
Pare and core apples and slice thin; place in large bowl.
Combine sugar, flour, lemon rind, cinnamon, nutmeg, and mace in a small bowl.
Sprinkle flour mixture over apples and toss gently until all apples are covered.
Divide dough in half.
Cover unused portion so it will not dry out.
Roll out half of dough on a lightly floured board.
Fit into a 23 cm [9-inch] pie pan.
Fill with apple mixture.
Dot apples with butter or margarine.
Roll out remaining half and fit over pie.
Seal edges so juices do not escape.
Slit crust in center to allow steam to escape.
Bake at 205° C [400 °F.] for 55 to 60 minutes or until lightly browned.

The Choctaw Indians, native to the area, had discovered the use of dried leaves of the sassafras tree. They ground the leaves to a powder, which not only gave liquids a delicate flavor but also thickened them. The powder was eventually named *filé powder* by the settlers, and is commonly used in thickening soups and stews. It must be used with care because if it is overcooked, it becomes stringy. The name filé probably came from the French word *fil,* meaning thread.

The Africans introduced many of their native cooking methods, such as simmering foods slowly for a long time in iron pots. They brought with them okra, a vegetable which thickens hot liquid. *Kingumbo* was the Bantu word for okra.



General Mills, Inc.

Apple pie was typical of the many home-baked foods made by midwesterners.

The word was shortened to *gumbo,* a hearty Creole soup thickened with okra. Filé gumbo is thickened with filé.

Jambalaya, another popular Creole dish, is a descendant of Spanish paella. It is a mixture of seasoned shellfish, fish, and poultry, cooked with rice in a tomato sauce.

Pralines, rich candies made with caramelized sugar and pecans, are another Creole favorite.

Soul Food

African settlers in the South combined their native food customs with locally grown foods and Indian cooking.

From the Indians, the Africans learned to make corn



Blue Goose

Africans introduced okra to the South, making it an important part of cooking in that region.

products such as hominy, mush, dumplings, bread, and popcorn. They learned to cook rabbit, possum, squirrel, catfish, oysters, and turtle. The Africans added their love of highly seasoned sauces and gravies as well as cooking techniques such as deep fat frying. They introduced foods such as okra, kidney and black beans, pepper, and sesame seeds.

Colonial landowners used only what they considered to be the best parts of animals and gave the rest to the Africans. As did the Europeans, the Africans used every edible part of the animal as food. They developed their own special recipes for pig's feet, tails, and ears, and for hog jowls. From the small intestines they made *chitterlings*—small cooked pieces of intestine served with a spicy sauce or dipped in batter and deep fat fried.

The most common vegetables were corn, cassava, rice, okra, yams, turnips, and greens. Bacon fat was used to season beans and other vegetables and greens. Pepper was sprinkled generously in most meat and vegetable dishes. Lemon and lime juice, vinegar, and hot pepper sauce were common in soups and stews. Other seasonings included parsley, coriander, sage, garlic, thyme, basil, curry, ginger, mint, and saffron.

Hush Puppies

Metric		Ingredients	Customary
Weight	**Volume**		
		Vegetable oil or shortening for frying	
195 g	360 mℓ	White cornmeal	1½ cups
60 g	120 mℓ	All-purpose flour, unsifted	½ cup
8 g	10 mℓ	Baking powder	2 teaspoons
3 g	2.5 mℓ	Salt	½ teaspoon
1	1	Egg, well beaten	1
—	180 mℓ	Milk	¾ cup
40 g	60 mℓ	Finely chopped onion	¼ cup

Temperature: 191 °C [375° F.]
Yield: Approximately 20 hush puppies.
Pan: Electric skillet or deep, heavy saucepan for frying.
Heat, in electric skillet or deep saucepan, 2.5 to 3.8 cm [1 to 1½ inches] oil or shortening to 191 °C [375° F.].
Sift cornmeal, flour, baking powder, and salt together onto wax paper.
Mix egg, milk, and onion in a bowl.
Add cornmeal mixture to egg mixture gradually, mixing thoroughly until well blended.
Drop batter by teaspoonfuls into hot oil. Fry until golden brown on each side.
Remove hush puppies from oil with a slotted spoon and drain on paper towels.
Serve warm.



National Marine Fisheries Service

Southern favorites such as fried catfish and hush puppies became known as soul food.

The cowboys' meal . . .

All photos Institute of Texan Cultures



Typical setup for cooking a cowboys' meal. The iron kettle hanging over an open fire is used to make "son-of-a-gun" stew. Buried pots slowly cook beans and sourdough biscuits.



The cowboys' traditional food—"son-of-a-gun" stew.



A layer of sourdough biscuits in an iron pot, ready to bake.

Dried beans were stewed with tomatoes, onions, fish, herbs, pepper, and oil. Sweet potato pie and pecan pie, as well as molasses pudding, were favorite desserts.

Many soul foods have unusual names, but the origins of most have long been forgotten. *Hopping John* is a seasoned combination of peas and rice. *Hush puppies* are made of cornmeal batter dropped by the spoonful into deep hot fat. They are often served with fried fish. Legend relates the name was coined in early days when people gathered around campfires. They threw deep-fried cornmeal batter to barking dogs to quiet them. As they threw the fried batter, they said, "Hush, puppies!"

Let's Explore and Report

- Make up a poster of either Creole or Soul foods. Clip pictures from newspapers and magazines, showing typical foods. Include one or two recipes.

FOOD IN THE SOUTHWEST

Cooking in the Southwest was influenced by the chuckwagon of the cowboy, the predominance of beef, and the food customs of the Indians, Spaniards, and Mexicans.

When the Spanish conquistadors arrived in the Southwest in the sixteenth century, they found the Indians growing corn, squash, beans, pumpkin, and hot chilies. Game, wild greens, berries, pinyon nuts, and seeds were the staples of the Indian diet. The Spaniards ruled the area for 200 years and introduced many foods such as sheep, goats, and cattle, and such herbs as coriander and oregano.

Before long, cattle roamed the Texas plains, tended and herded by the cowboys. The chuckwagon was a food supply wagon, carrying food and equipment used by the cowboy cook to prepare meals over an open campfire. The main dish was usually cowboy stew, sometimes known as "son-of-a-gun stew." It was made from the tongue, liver, heart, and sweetbreads left over from slaughtered beef.

Biscuits to accompany the stew were baked in a large iron kettle over hot coals. The meal was served with steaming cups of strong, black coffee.

Soon, Mexican foods such as beans, corn, and chili peppers found their way into chuckwagon cooking. Pinto beans became standard fare in a cowboy's meals. Other Mexican specialties such as enchiladas, tortillas, tacos, and tamales drifted across the border and became favorites in the Southwest.

Many people think *chili con carne,* a Southwest favorite, is of Mexican origin. However, Texans claim it originated in San Antonio, Texas, made from locally grown ingredients—red peppers, marjoram, and beef. Chili powder, a combination of ground chili pods and spices, was developed around 1900 and used to season chili con carne. The original chili was made with diced, not ground, beef and did not have any beans.



Institute of Texan Cultures

A cowboy uses a pitchfork to turn beef at a barbecue.

Barbecued beef is considered by many as a southwestern specialty. However, beef was roasted on a grid over an open fire in early Virginia in the seventeenth century, as well as by many Indian tribes. The Southwest added a special touch—basting the meat with a spicy tomato-base sauce, which came to be known as barbecue sauce.

Let's Explore and Report

- Select a southwestern state, such as Texas, Arizona, or New Mexico. Describe the early settlers in the area and the type of food they ate.

PACIFIC COAST AND NORTHWEST FOODS

From the southern coast of California to the northern part of Alaska, the cooking in this area has as much in common as it has differences.

The two common characteristics are the abundant food supply and the simplicity of cooking. Foods rich in flavor and color abound throughout most of the region. Fertile valleys in California, Oregon, Washington, and Alaska produce a bountiful supply of high-quality fruits, berries, and vegetables. The plentiful supply of fish, not only from the coastal waters but from the many rivers, has made it one of the most popular foods in the region. The variety of shellfish is endless, from abalone in California to king crab in the Pacific Northwest.

In many areas, game such as reindeer, mountain goat, and elk provides food, especially in



National Marine Fisheries Service

Broiled salmon steaks with creamy dill sauce, garnished with fresh dill.

Alaska. Because of the high cost of imported food from the United States, many Alaskans depend on their fishing and hunting skills for meat and fish.

Because most of the foods are high in quality and rich in flavor, cooking methods are simple. They bring out the natural flavor of the food, but do not mask it. Freshly caught fish is usually baked or broiled. A local version of bouillabaisse, or seafood stew, is made from salmon, halibut, clams, shrimp, and crab. Game birds are roasted, usually with a flavorful stuffing. Fruit and berries are served as desserts, sometimes cooked with simple sauces or baked into pies.

Occasionally, the cooking is flavored with the traditions of ethnic groups who settled in the area. In the great shipping ports, such as San Francisco, Seattle, and Los Angeles, ethnic specialities from across the Pacific Ocean mingle with local food customs. Chinese, Japanese, Korean, and Polynesian foods were introduced into the area during the early days of the sailing vessels. Many wealthy families on the West Coast in early days employed Oriental cooks.

Today, these food traditions are an important part of the cuisine on the West Coast.

The earliest settlers in California and Alaska were prospectors in search of gold. Their food supply was simple, sometimes meager, but every prospector depended on sourdough as his staple food. *Sourdough* was a leavening or starter made from flour, water, and salt. Wild yeast cells in the air settled in the mixture, grew, and fermented, creating a leavening that could be used to make breads. The sourdough starter gave the bread a mild, pleasant, acid flavor. A specific amount of starter was added to flour, water, and other ingredients available, such as milk, eggs, sugar, and fruit. The dough was handled like yeast dough. Kept in a crock or pot, the starter was replenished by adding flour and water.

A prospector's sourdough starter was one of his most valuable possessions. It was so important to him that soon prospectors were known as "sourdoughs."

Today, San Francisco sourdough bread is famous throughout the country.

HAWAIIAN FOOD

Located in the middle Pacific, Hawaii was a natural stopping point for merchant ships sailing between the United States and the Orient. Although the natives are Polynesian, many Orientals settled the islands. As a result, Hawaiian cooking combines the traditions of the Polynesians, Chinese, Koreans, Japanese, and Filipinos. English customs were introduced by early colonists in the eighteenth century.

The islands have a plentiful supply of seafood—fish and shellfish. In addition, the tropical climate insures an abundant supply of fruits, many of which can grow only in the tropics. Coconut, pineapple, papaya, and mango have become important parts of Hawaiian cooking. Pork and chicken, introduced by colonists, are also commonly used.

The Polynesian influence includes the use of sweet-sour sauces and tropical fruits. Main-dish recipes often feature pork or chicken combined with fruits such as pineapple and flavored with a sweet-sour sauce.

The Chinese influence includes rice, soybeans, pork, and Chinese vegetables. Koreans have contributed *kimchi,* a pickled cabbage. The Japanese introduced the *hibachi,* an outdoor cooking grill. *Teriyaki,* a Japanese marinade made with soy sauce, is also popular, as are rice and soybean products.

Perhaps the most famous Hawaiian food custom is the *luau* or feast. The main attraction is a whole pig roasted in an open pit. Other foods such as meat or fish wrapped in leaves, bananas, and sweet potatoes are also roasted in the hot coals. Along with those foods, the luau also includes salted salmon, coconut milk pudding, and poi. Made from ground taro root, *poi* is a smooth, thick, porridge-like food, with very little flavor. The luau is generally accompanied by festivities such as dancing, singing, and entertainment.

Let's Explore and Report

- Research the foods served at an authentic Hawaiian luau. Plan a luau party, using foods available in your area.

REGIONAL FOODS TODAY

Improved communication, technology, and travel have made many regional foods familiar throughout the country. When you speak of Boston baked beans, Texas barbecued beef, or corn-stuffed pork chops, do you consider them as regional foods? While they are still popular in the regions in which they originated, they can usually be found in homes and restaurants throughout the country.

Convenience foods have helped to make regional foods known from coast to coast. Most supermarkets have an assortment of regional foods in different forms—frozen king crab from the Northwest, sourdough bread from San Francisco, and bottled barbecue sauces and canned chili con



National Broiler Council

Chicken Hawaiian—cooked chicken in a sweet-sour sauce with pineapple and vegetables.

carne from the Southwest. As a result, the distinctions among regional food favorites are blurring. However, certain foods are still preferred in many areas, with ethnic and regional flavors still dominant.

One of the largest sports and recreational feeding companies reports that people attending sporting events in different parts of the country have varied eating patterns. Years ago, hot dogs, soft drinks, and peanuts were the most popular foods at sports events. In recent years, preferences have changed. Popular in New York are *knishes*—a hand-held potato pudding of Jewish origin. In Maryland, sports fans prefer crab cakes. Those attending sports events in Boston buy Italian sausage sandwiches while in Buffalo Polish sausage sandwiches are most popular.

Thus, even though advertising, communications, and travel have popularized many regional foods, people still tend to have their own food preferences. These are based on the foods their families served as well as foods usually enjoyed by people in the area.

Let's Explore and Report

- Study the food habits in your area. What kinds of foods are most popular? Where did these foods originate?

What Would YOU Do?

- Your school is having a Thanksgiving Day celebration in honor of the first immigrants in the area. You have been asked to research information regarding the foods grown and prepared by early settlers. You are to adapt the recipes to modern cooking methods and convenience foods.



Institute of Texan Cultures

Ethnic foods continue to grow in popularity. Mexican tamales are a favorite in many parts of the country.



Chapter 26

Outdoor Cooking

To help you to . . .

- Cook safely outdoors over an open fire.
- Choose foods for outdoor cooking.
- Build a campfire for cooking.

Do you enjoy the charcoal-broiled flavor of food cooked outdoors over an open fire? Cooking outdoors has become one of the most popular pastimes in our nation. Food seems to taste better cooked outdoors, whether it's in the backyard, out in the park, or on a backwoods trail. You can cook food over an outdoor grill or an open campfire.

Look for these terms

brazier
briquets
fire bowl
flareup
grid
grill
hibachi

Reynolds Aluminum

Cooking over an open fire is a popular pastime.

COOKING ON AN OUTDOOR GRILL

In the city, your outdoor grill can be on a balcony, a porch, or a patio. Some areas, however, have laws which prohibit using a grill in certain places, such as a porch or balcony. Be sure you know your local regulations before you do any outdoor cooking.

Types of Outdoor Grills

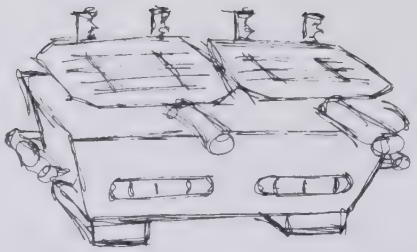
Many types and sizes of outdoor grills are available. A *grill* usually consists of a *fire bowl*—a metal container shaped like a box or a bowl. The fire bowl holds the burning charcoal. A metal grid fits over the top of the fire bowl to hold the food over the hot coals. As the heat cooks the food, fat and juices drip down over the coals. Most grills are supported on long metal legs, but a few are not. Those without legs can be placed on the ground if you do not mind stooping over to cook. They can also be placed on a heatproof table, such as a metal cart.

A grill can be uncovered or covered. An uncovered grill is generally used for flat meats such as hamburgers, steaks, fish, and poultry pieces, which cook quickly. The food is cooked directly over the coals and absorbs the full heat of the charcoal. A covered grill is generally used to cook larger cuts such as roasts and whole poultry. The cover allows you to control the temperature and retain the heat so large pieces can cook slowly and evenly. Some grills have a rotisserie, operated by electricity, which turns the meat over the hot coals.

If you're just a beginner in outdoor cooking, you might want to start with an inexpensive *brazier* grill—a round container on legs with a metal grid. You might prefer a *hibachi*—a cast-iron rectangular grill which



A brazier grill consists of a metal bowl supported on legs with an iron grid for holding food.



A *hibachi* is a rectangular cast iron grill.

originated in the Orient. The word comes from the Japanese *hi* meaning "fire" and *bachi* meaning "bowl."

Grills fired by gas or electricity are also available. Gas grills cook by infrared radiation. The radiation is supplied by ceramic briquets heated by a gas burner. Gas grills are usually installed permanently, although some use bottled gas and can be moved around. Electric grills must have a grounded electric outlet available to which they can be connected.

When selecting a grill, look for these features:

- *Stability.* Be sure the legs are sturdy and the grill balanced evenly on them. If the grill tends to sway or slope, or if the legs appear weak, the grill may tip over when you use it. The fire bowl should be attached securely to the legs. Be sure the metal grid fits securely on the fire bowl so it will not slide off as you cook.
- *Durability.* If you plan to use the grill regularly, you might want to invest in one that is built of strong, long-lasting materials. Some grills have a baked porcelain finish which prevents the fire bowl from burning out and rusting.
- *Cost.* Grills vary in cost. How much you decide to pay will depend on the amount of barbecuing you plan to do and the accessories you want.
- *Appearance.* If the grill is to be kept in the backyard or on the balcony, you might want one that is attractive and durable enough to maintain its appearance. On the other hand, if the grill is to be stored and used just occasionally, appearance may not be too important.
- *Size.* Grills come in many sizes. Select one that will give you enough cooking area for the food you plan to prepare. For instance, if you plan to cook only a few hamburgers at a time, a small hibachi may be adequate.

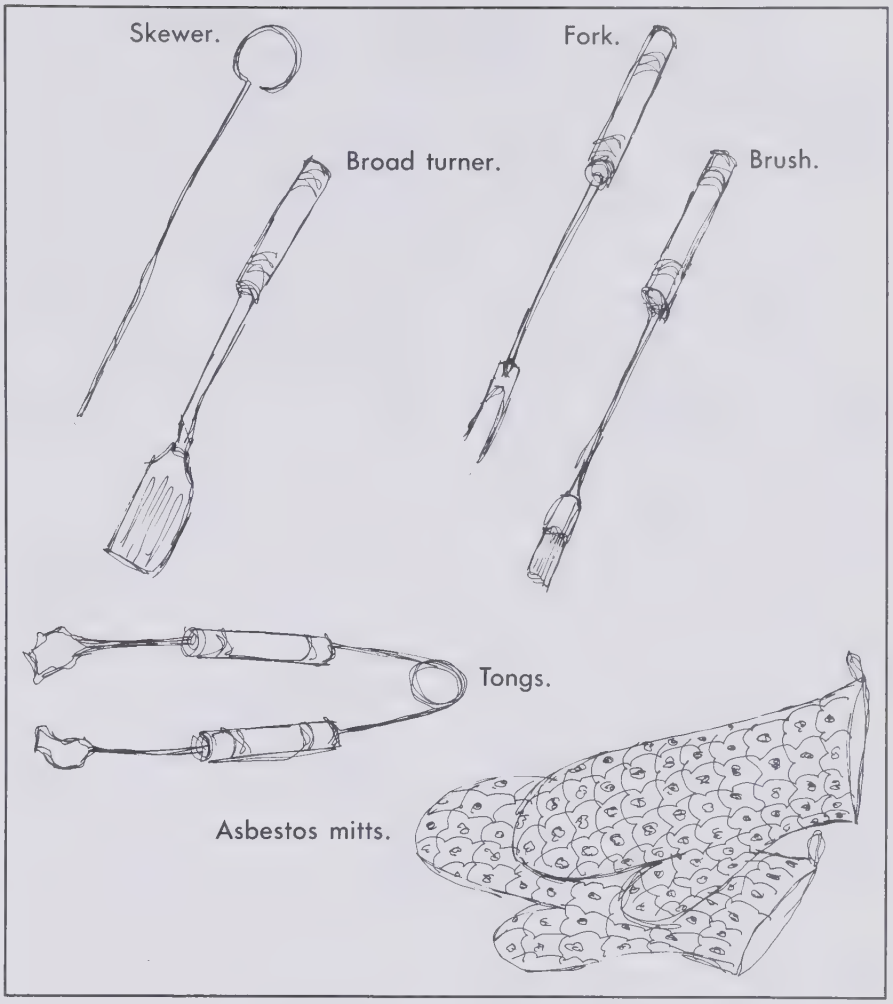
Additional Equipment

In addition to the grill, you will need several small but essential tools and other equipment to help you cook easily and with safety. Be sure to buy special barbecue tools with long handles so you can reach the food but keep your hands away from the heat.

- *Tongs.* These are a necessity. You can use them for any job from turning steaks or potatoes to handling hot charcoal briquets.
- *Fork.* Use the fork along with the tongs to handle roasts and poultry and for spearing frankfurters.
- *Broad Turner.* This tool is handy for turning hamburgers and fish.
- *Brush.* This tool is needed for brushing food with sauce.
- *Skewers.* If you enjoy shish-kebabs or food on a skewer, be sure to have an ample supply of plain metal skewers without handles. Wood or plastic handles will burn over the heat.
- *Asbestos Mitts.* Wear these when you cook or handle hot plates and skewers.
- *Grid Brush.* This brush is made for cleaning the grid. It is made of wire and has a slot in the end for scraping the metal rods on the grid. If you use the brush regularly after each time

you cook, the grid should need no additional cleaning.

- *Charcoal Briquets.* You can buy these in grocery and other stores at different prices. Why do prices vary? Usually, price is determined by the quality of the briquets. The most costly briquets are made of hardwood and provide an even heat for a relatively long period of time. Inexpensive briquets may burn unevenly, turn to ashes too quickly, or sometimes give food undesirable odors and flavors.
- *Work Table.* You will need a work surface close to the grill to hold tools, food, and other supplies. You can use a metal cart, small table, or even a TV tray. Be sure it is sturdy and will not tip or collapse as you put food on it.
- *Heavy-Duty Aluminum Foil.* Heavy-duty foil is essential when you barbecue. Use it to make food containers and grease catchers, as well as to serve on. Be sure to use the heavy-duty type. Regular household foil is too lightweight and tears easily.



Essential tools for cooking over an open fire.

How To Use the Grill

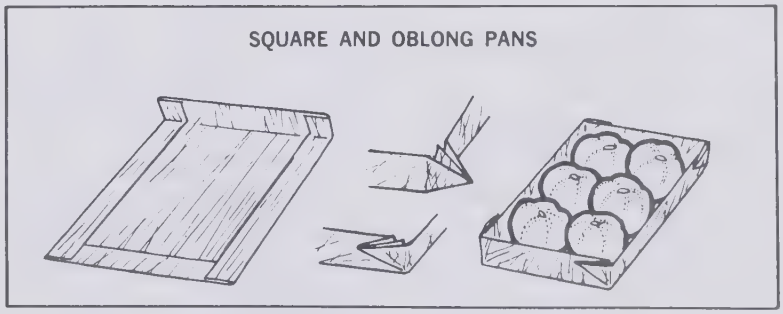
When building a fire and cooking over it, keep safety uppermost in mind. Just a second's carelessness can turn a cookout into a tragedy.

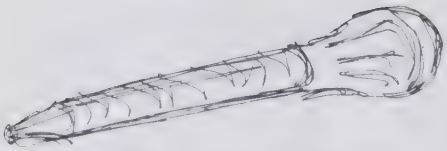
Here are general guidelines for using a charcoal grill:

- Wear a heavy-duty apron, without dangling sashes or frills.

Use heavy-duty aluminum to make foil pans, either for cooking food on the grill or for catching drippings.

Reynolds Aluminum





A baster is used to squirt water on coals when a flareup occurs.

Do not wear plastic aprons—some ignite easily. Be sure you do not have long dangling sleeves or shirttails that could easily catch fire. Tie long hair back in a ponytail to keep it from catching fire.

- Keep a bowl of water and a baster on hand for flareups. A *baster* is a long, narrow tube attached to a rubber ball which can be filled with water. A *flareup* occurs when fat drippings accumulate on the coals and ignite. Squirt water on it with the baster to douse the flame.
- Place the grill in the open, away from anything that might catch fire. If the grill is movable, test the wind. Place the grill so the wind will not blow smoke or hot ashes toward you as you work. Remember, wind-swept coals can catch a garage, a house, or an apartment building on fire.
- Line the bottom of the fire bowl with heavy-duty aluminum foil. If the bowl has vents, cut out openings in the foil to fit the vents. A layer of vermiculite or gravel on the bottom of the bowl will keep it from burning out. It also helps the fire "breathe" and give more heat for cooking.
- Start the fire about 45 minutes before you want to begin cooking. When you cook with charcoal, you do not cook over flaming coals. Instead, the coals must be covered with gray ash—your signal that they are glowing under the ash and ready to cook the food. It usually takes about 45 minutes after they have been ignited for the coals to be covered with gray ash.
- Put the charcoal briquets in the bowl. Most barbecue experts recommend stacking the briquets in a pyramid so they will burn more quickly.
- Ignite the coals. If the briquets are bone dry, they can usually be ignited by holding a flame to them for a minute or two. It may take longer if the briquets have absorbed moisture from the air on a humid day.
- If you use a fire starter, be sure to keep other people, especially children, far away. Saturate the briquets but do not flood them. Wait a minute or two so the fluid has a chance to soak in. Then use a long fireplace match to ignite the briquets. NEVER USE GASOLINE, KEROSENE, ALCOHOL, OR CIGARETTE LIGHTER FLUID TO START A FIRE.
- If you buy an electric fire starter, be sure it has the UL (Underwriters' Laboratories) safety seal.
- To start a fire rapidly, ignite each briquet. Briquets do not burn with a visible flame unless there is a considerable draft. Instead, the fire creeps around the surface to form a fine gray ash that hides the glow of the burning briquet.
- Never apply more fire starter fluid on the fire after it has been started. It may explode.
- When the briquets are covered with a gray ash, they are ready for cooking. Separate them with long-handled tongs and space them according to the type of food you are preparing. A layer of coals should be under food to be cooked by direct heat, such as steak or hamburgers.
- If a cover is used on the grill, the coals are generally moved to the side so the food cooks by indirect heat. An aluminum foil "pan" is placed under the food to catch drippings and prevent flareups.
- For extra flavor, try sprinkling wood chips over the coals. The smoke gives food an added flavor. You can buy wood chips with different smoke flavors, such as hickory and oak. Follow package directions since some chips must be soaked in water before using.
- Keep pets away from the outdoor cooking area. They can easily knock over the grill or the work table.
- *NEVER USE AN OUTDOOR GRILL OR HIBACHI IN-*

DOORS—whether in a house or in a garage. Charcoal gives off deadly carbon monoxide—an odorless gas. Even if a window is open, enough fumes can accumulate to kill you.

- If you must step away from the fire, appoint someone as a fire tender. Never leave a fire unattended.

When you are through cooking:

- Allow the briquets to cool in the fire bowl. They retain heat for a long time so do not discard them in an area where people or animals might walk on them. Do not dump them into a combustible box such as cardboard or plastic—it could ignite.
- Never remove the grid from the grill until it is cool. Someone could step on it barefoot and suffer serious burns.

IMPORTANT: Read the directions in the owner's manual accompanying your grill. The instructions given above are general. Your grill may have special added instructions that must be followed for safe and proper cooking.

Food for Grilling

Since grilling is a dry-heat method of cooking, tender cuts of meat should be used. However, less tender cuts from the high grades of beef—prime and choice—can also be broiled. Select steaks at least 2.5 cm [1 inch] thick although 3.8 to 5 cm [1½ to 2 inches] is a better size. Pork, lamb, poultry, fish, and veal may also be grilled. Be sure, however, that fresh pork is well done throughout before serving it.

Other foods can also be cooked on the grill. Use a skillet or pan or wrap the foods in heavy-duty foil and place on the grill. You can cook vegetables such as corn and potatoes and you can warm buns and biscuits.

The outdoor atmosphere and aroma of cooking foods seem to increase appetites. Be sure to allow a little more food per person than you normally would.

SERVING FOOD OUTDOORS

If you eat outdoors, observe the rules of serving foods discussed in Chapter 15. Remember, keep hot food hot and cold food cold. Bring out only enough food to serve everyone once and keep the rest stored at the proper temperatures indoors. If seconds are wanted, more food can be brought out later.

Let's Explore and Report

- Shop for an outdoor grill you would want to buy. Secure a descriptive brochure from the dealer. Make up a display, showing the features of the grill and why you think they are desirable.
- Demonstrate how to build a fire in a brazier-type grill.
- Make up a bulletin board titled "Grill Safely!" Use pictures from newspapers and magazines to show proper techniques for cooking on a grill.
- Find out from local authorities what restrictions, if any, are placed on outdoor cooking in your area.

COOKING OVER A CAMPFIRE

Cooking over a campfire can be an exciting adventure. Whether you're bicycling, backpacking, or fishing, you can enjoy building a fire and cooking outdoors.

Before you start out on your trip, make a list of the food you will take and the equipment you will need. Don't forget the obvious necessities, such as matches. Check your list carefully. Remember, when you are a long way out in the country, you can't run back home for something you forgot.

In many areas, good firewood is scarce. You will probably have a more successful cookout if you take along a portable grill and charcoal briquets. If you camp out regularly, you may want to invest in a portable camp cook stove, which uses bottled gas as a fuel.

Where To Build the Fire

If you are in a park area, you may find ready-built fireplaces for your use. They may range from grills to an arrangement of stones with a metal grate on top. Be sure to use the fire sites



Reynolds Aluminum

Be sure to follow rules for safety and sanitation when serving food outdoors. Keep hot foods hot and cold foods cold.

provided. They are intended to protect the remainder of the park from damage by fire. If no ready-built fireplaces are available, stay in the area designated for building fires. If you are not in a park, be sure to secure permission from the owner to build a fire.

Select an open spot away from trees, leaves, and other flammable materials. Pick a spot from which the fire will not spread. Also choose an area where the breeze is light. If it is windy, you may have to build a screen of heavy-duty aluminum foil suspended between two poles to shield the fire from heavy breezes.

How To Build a Fire

For safety's sake, don't build a large fire. Besides being a fire hazard, it will only waste valuable wood.

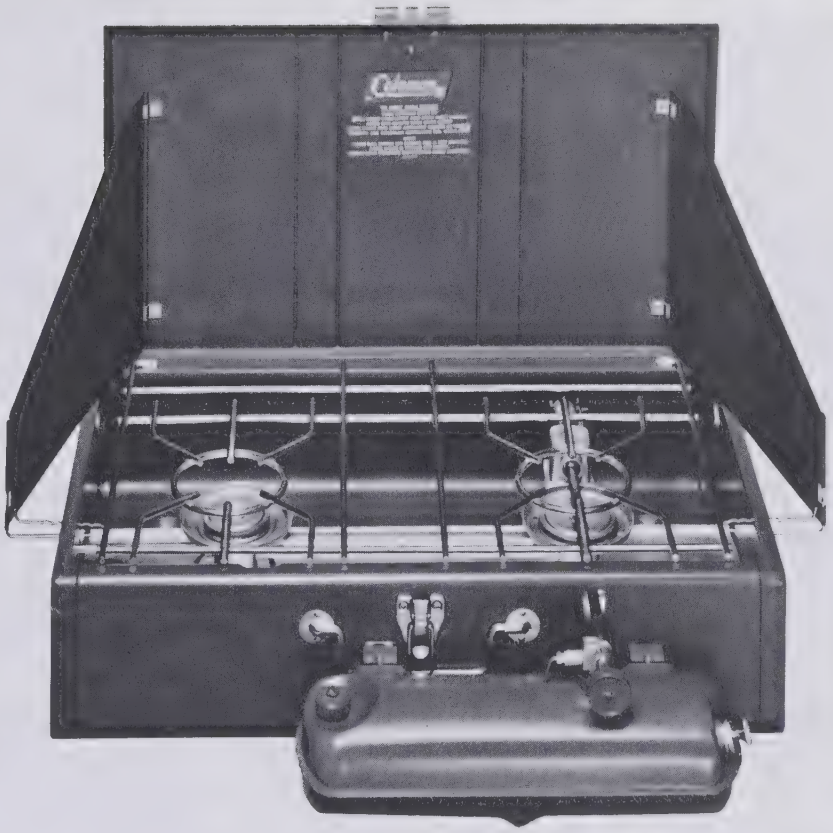
Clear a spot about 3 m [10 feet] square by shoveling away ground litter. Dig a shallow depression and build the fire in it. You can also build a ring of rocks to enclose the fire. Whichever method you use, it is important to keep the fire from spreading.

Follow these guidelines for building a campfire:

- Generally, it takes about $1\frac{1}{2}$ to 2 hours for a wood fire to

burn down to a bed of hot coals, ready for cooking. This means you must prepare the fire far enough ahead of time to allow it to burn down.

- The kind of fire you build is determined by what you are cooking, the wind, and the area. You can make several different arrangements, depending on your needs, as shown on page 463.
- Select the wood carefully. You will need kindling to start the fire: small dry branches, fine dry twigs, bark strips or shavings, dry pine needles, and centers of small dead-and-standing trees. You will need larger sticks and also small logs. Use split logs rather than round, smooth ones—they burn more easily. Remember, green or fresh wood does not burn easily.
- Soft woods such as pine, spruce, and cedar burn quickly. However, they cool rapidly and leave very few glowing coals to cook on, so they are best to use only for starting the fire. Hard woods such as oak, ash, hickory, apple, walnut, cherry, and maple burn slowly and make excellent coals for cooking. Use them once the fire has started.
- To start the fire, build a small pile of very dry twigs, bark strips, or shavings around it. Leave enough space between the twigs to let air through to the fire. Ignite the kindling. As the fire burns, add dry sticks which are a little larger. Keep adding larger sticks until the fire is burning hot. As you add sticks, cross them over one another so there are air spaces for the fire. Otherwise, it may smother. Keep adding larger sticks and then small logs. Allow them to burn into a good bed of red hot coals. The fire is then ready for cooking.
- Keep a bucket of water, sand, and a shovel nearby for emergencies.



Coleman

A portable camp cook stove uses bottled gas as fuel.

To Cook Food Over a Campfire

If you have built a fire surrounded by rocks or heavy logs, you may be able to place a metal grid over it. This will give a level surface on which to grill the food and place pots and pans. If you do not have a metal grid, you can cook the food right in the coals.

To cook food in the coals, wrap it first in heavy-duty foil. Mold the foil to fit the food closely. Place the packages on the hot coals. Check occasionally to see how the food is cooking. Turn packages so the food cooks evenly on all sides.

The type of food you take with you will depend on how

How to build a campfire . . .

Girl Scouts of the U.S.A.



For safety's sake, have a shovel or rake and a bucket of water or sand close at hand.

U.S. Forest Service Rangers recommend clearing an area for about 3 m [10 feet] in all directions from your fire. Circle the area with rocks.





You need three sizes of fuel to build a fire—very fine tinder to start it, thin kindling to get it going, and heavier, long-burning logs to keep it burning.



Set a triangular base to hold tinder. Leave plenty of air space underneath for a draft or the fire will suffocate. A flame burns upward, so light the bottom of the tinder pile. You may have to blow gently on the fire to get it started.

When kindling is well lit, add smaller pieces of fuel, and finally larger ones.



long you plan to be gone, where you are going, and how you must carry it. If you are hiking or bicycling, remember, exercise and fresh air will increase appetites.

If you are backpacking, you will be limited as to the amount of food and equipment you can carry. You might consider prepackaged foods such as freeze-dried meals made especially for camping trips. Your local sporting goods store may have a supply or may be able to order some for you.

SERVING FOOD

As with any other meal preparation, outdoor food service should be carefully planned to avoid food poisoning. If you take perishable foods, be sure to have a cooler that will keep them cold. Otherwise, take foods that do not need refrigeration.

If you are on a short trip involving only a meal or two, you might take paper plates and plastic cutlery. On longer trips, each camper should have a set of plastic or aluminum plates, cups, and cutlery that can be labeled with the person's name. Campers should use only those dishes with their names on them.

Cleaning Up

If you plan to cook more than one meal out, take along a large bucket for water. It can be packed with supplies while you travel, to save space. Also take dishwashing supplies such as two dishpans, liquid detergent, scouring pads, dishcloths, cleanser, dish towels, and plastic bags for rubbish.

For cleaning up, heat the water over the fire. Wash, rinse, and dry dishes carefully.

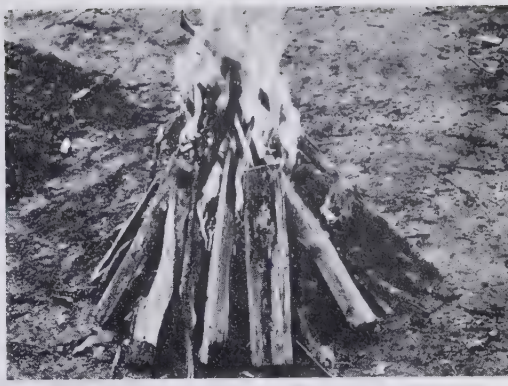
Before you leave the area, be sure to put the fire out completely. Spread out ashes and partly burned wood. Wet down thoroughly and stir with a stick. Wet and stir again. Before leaving, test to see if the fire is completely out by feeling the ashes with your bare hands—they should be cool to the touch. If you can feel warmth as your hands draw close to the coals, don't touch them but pour

Kinds of fires . . .

Girl Scouts of the U.S.A.



The hunter's fire requires two rows of stones. Build a teepee fire in the wider end for boiling dishwater and rake coals into the narrower end for cooking.



For a fast, hot fire to boil water or cook stew, add fuel to make a tall, conical teepee shape.



The criss-cross fire lasts a long time and makes good coals for broiling or toasting.

Put out the fire completely before leaving the area . . .

Girl Scouts of the U.S.A.



Spread out ashes and partly burned wood and wet them down thoroughly.



Scoop up a handful of wet ashes to test for "cold out." If ashes are warm, wet down and stir again.

Stir with a stick, then wet and stir again.



Rake or scrape the fire area and restore it as much as possible to original condition.



more water on them. Rake or scrape fire area to restore to original condition.

Be sure the area is clean of litter. Pick up paper, cans, and any other trash and put in trash cans, if they are provided. If none are available, store the trash in a paper or plastic bag and take it with you. Dispose of it at the first trash can you find. Do your part to keep the environment clean.

Freshly Caught Fish

Do you like to fish? Freshly caught fish is probably one of the most enjoyable foods to prepare over an open fire. Remember, fish is highly perishable, so follow these guidelines for handling:

- Never fish in polluted water. The fish will be contaminated.
- Unless you plan to cook the fish within a short time or are ice fishing in very cold weather, take an ice cooler with you to store the fish.
- Fish begin to deteriorate as soon as they leave the water. Small fish are more perishable than larger ones. A cleaned (or dressed) fish spoils more slowly than a whole fish because it has fewer bacteria. Also, fish spoil more rapidly in warm weather than in cool.
- You cannot drag dead fish on a line in the water behind the boat for several hours and expect them to have a good flavor later in the day.
- Do not allow fish to flop around any more than necessary when you bring them in—they bruise easily.
- Clean fish as quickly as possible after catching them. If fish have a strong flavor, it often means they have not been properly handled.

Cleaning fish is easy, once you learn how:

- To scale the fish (remove the scales), you can use the special blade found on some sporting knives, a fish-scaling device, or the back of a regular knife blade. A wet fish scales more easily than a dry one. Place the fish on a flat surface, holding it firmly by the head. Using short, quick strokes, work from tail to head.
- Use a sharp knife. Cut the belly open from the vent to the head. Remove the entrails (insides) and the dark red streak along the backbone.
- Remove the head by cutting just back of the collar bone. Remove the pectoral (side) fins. If you decide to leave the head on, be sure to cut the gills out. Try not to cut into the body wall—such cuts can increase chances of spoilage.

If the fish is large, cut it into steaks. Clean the fish, then remove the large dorsal fin on the back by cutting along each side of the fin. Grasp the fin and give it a quick pull toward the head. To cut steaks, start on the back of the fish, cutting crosswise through the backbone. Steaks should be about 2.5 cm [1 inch] thick.

If you prefer fillets:

- Scale the fish.
- Make a cut down the backbone just behind the gills. Turn the knife and slice straight along the backbone, not quite to the tail.
- Cut along each side of the anal and dorsal fins for the length of the fish.
- Flip fillet away from body. Remove rib section by inserting blade close to tail end of rib bones and shave entire section away.

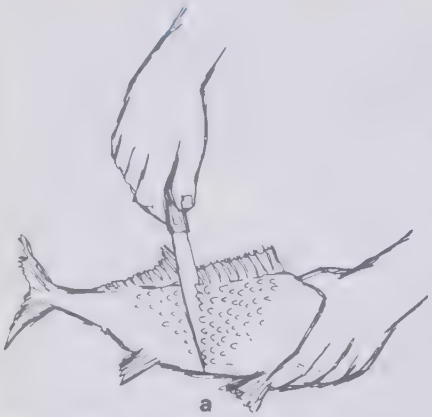
After fish are cleaned:

- Wash fish well with cold, clean water, but do not soak. Place them on ice in a cooler. In cold weather, fish can be kept in a cold place until ready for cooking. Cool air, freely circulating around fish, will cause the body cavity to glaze. This protects the flesh from spoiling for a short time just before cooking or placing in cold storage.
- Do not put fish in plastic bags unless they can be refrigerated. Plastic bags restrict the flow of air. If left in the sun for even a short time, the fish inside the bag will start to spoil.

TO COOK FISH OVER A CAMPFIRE

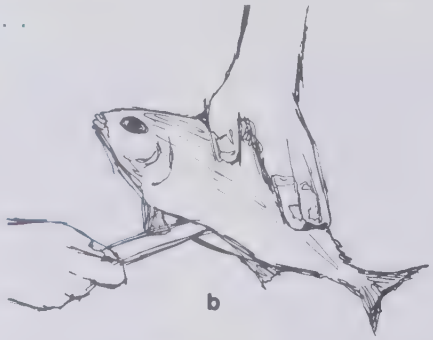
Although fish can be cooked over a campfire by poaching or simmering, most people prefer to fry or broil them. Follow instructions in Chapter 20 for cooking fish.

To clean freshly caught fish . . .



a

Place fish on flat surface. Hold it firmly by the head. Use short, quick strokes, working from tail to head.



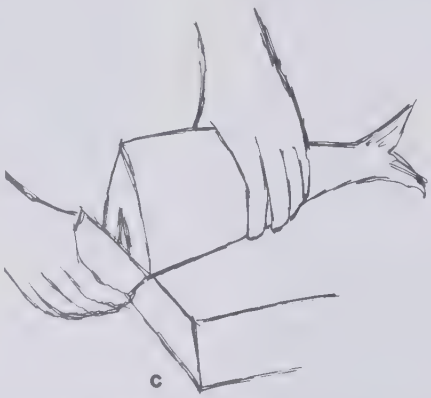
b

Cut belly open from vent to the head. Remove entrails (insides) and the dark red streak along the backbone.



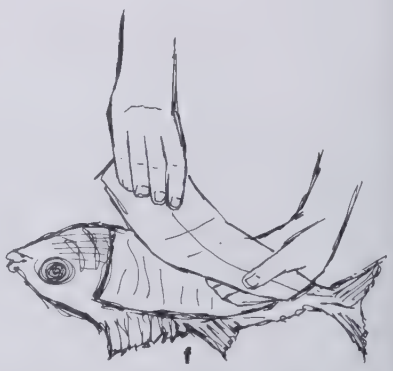
e

To cut steaks, start on the back of the fish, cutting crosswise through the backbone. Make steaks about 2.5 cm [1 inch] thick.



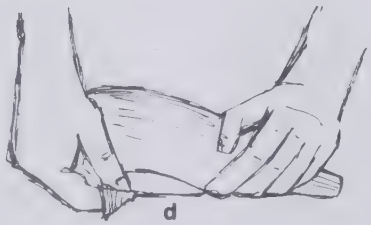
c

Remove head by cutting just back of the collar bone.



f

To cut fillets: Scale fish. Make a cut down the backbone just behind the gills. Turn knife and slice straight along the backbone, not quite to the tail. Cut along each side of the anal and dorsal fins for the length of the fish. Flip fillet away from body. Remove rib section by inserting blade close to tail end of rib bones and shave entire section away.



d

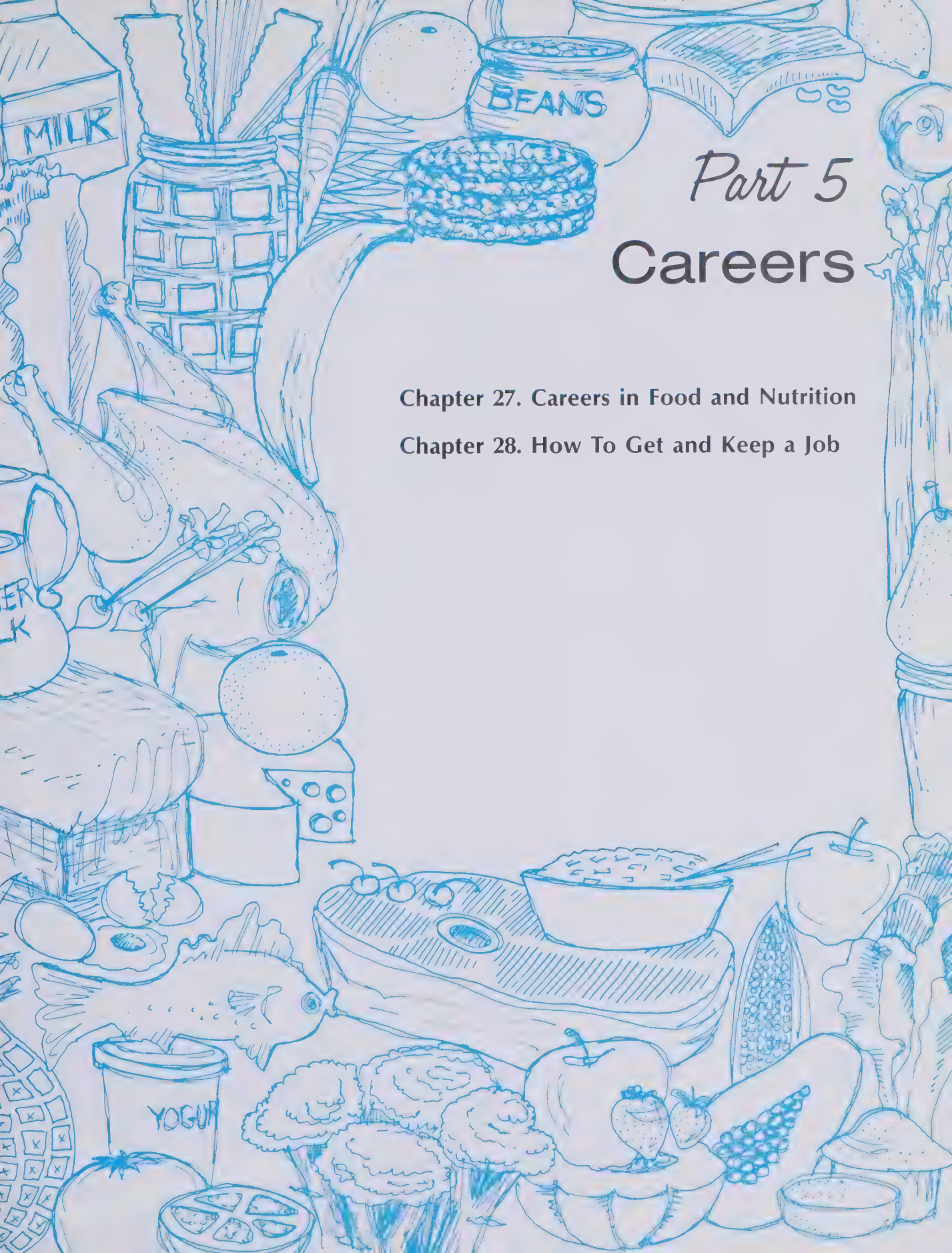
Remove fins.

Let's Explore and Report

- Interview a Scout leader about the correct procedure for building a campfire. Make up a visual display.
- Read the directions for cooking over an outdoor grill, in the first part of this chapter. Which of the safety measures would apply to cooking over a campfire? Make up a poster titled "Safe Campfires," giving safety rules to follow when cooking on a campfire.

What Would YOU Do?

- Your family is having a cookout for friends. Since the weather is threatening, they decide to move the grill inside the garage. To speed up the cooking, they plan to use kerosene to start the fire.



Part 5
Careers

Chapter 27. Careers in Food and Nutrition

Chapter 28. How To Get and Keep a Job


Whole Fryers
37c
89c
36c
Hot Bread
5 99c
85c
$1.05
4 65c
IT'S

Chapter 27

Careers in Food and Nutrition

To help you to . . .

- **Identify the types of career opportunities available in food and nutrition.**
- **Recognize the kinds of beginner's jobs available in food and nutrition.**
- **Distinguish the difference between a career and a job.**
- **Relate information on careers in food and nutrition to your own search for a career.**

Have you decided what you would like to do as your life's work? Organizations involved in food and nutrition can offer you many opportunities for a rewarding career. You can begin to work right after graduating from high school or you can go on to a vocational school, community college, or university.

A CAREER FOR YOU

Look for these terms
career
career ladder
job

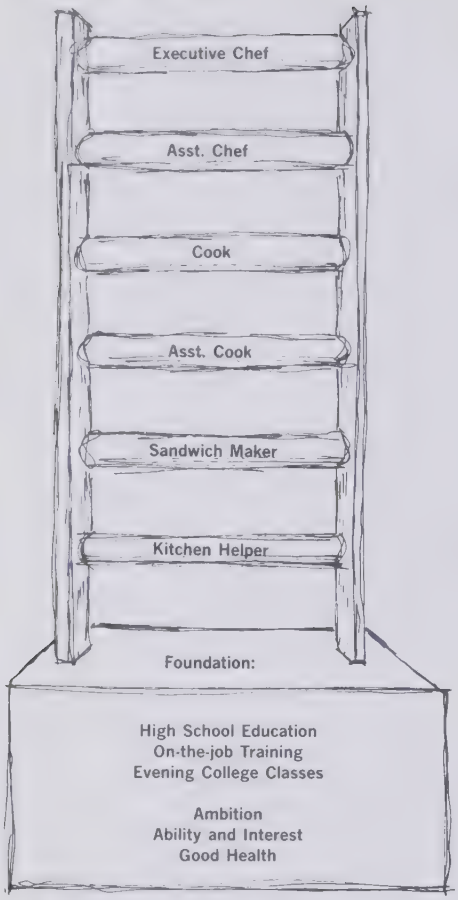
Jewel Companies Inc.
A career in food and nutrition, such as working with consumers, can be satisfying and rewarding. This supermarket home economist helps provide shopping aids for consumers.

Unless they plan to continue their education, most teenagers will be seeking full-time jobs after they graduate. What is the difference between a career and a job?

A *career* is the type of work you select to do for a long period in your life. For instance, you may decide you would like to be a chef, write consumer information, or be involved in community nutrition education programs.

People often think they must have a college education for a successful career. Of course, a college education can help you start at a higher level. However, if you are ambitious and graduate from high school or vocational school, you can have a rewarding, satisfying career with chances for advancement. You will find many opportunities for on-the-job training as you gain experience. Most employers are always looking for hard-working employees who are eager to move ahead. Sometimes employers will pay for evening classes in college to help your career.

A career has certain stages through which you can progress. High school graduates generally start with entry-level or beginning jobs. From there, they can work their way into intermediate jobs and finally to the top. These steps are sometimes referred to as a *career ladder.* It means the progress you make in your career can be compared to climbing a ladder. The bottom rungs represent the beginning jobs while high-level jobs are at the top. Intermediate jobs are represented by rungs in between. Page 470 shows a ca-



A career ladder for a food service employee.

reer ladder for a food service employee who started out as a kitchen helper.

A *job* is employment with a specific organization. It should provide you with the opportunity to work and advance on your career ladder. Some people may find one job that meets their career goals perfectly. They may stay at it for years, until retirement. Others, however, find they can grow only to a certain point on one job. Then they must seek another one to continue to advance in their chosen field.

Why is it so important that you seriously consider career choices now? Labor experts predict that today's average teenager will work from 35 to 45 years. If you work a 35-hour week and have two weeks for vacation, it means you will work 1,750 hours a year. In 35 years, that comes to 61,250 hours.

You can spend those hours working at a career you enjoy, one that gives you satisfaction, happiness, and an acceptable income. You can also spend the time drifting aimlessly from job to job or working in a career you dislike. Therefore the more thought you give to the type of career you would like to have, the better your chances for finding meaningful employment.

You may ask, "How can I be sure? What happens if the career I choose doesn't turn out to be the right one?" Many people have worked a few years at a career and then changed their minds and entered a new career field. Even though you select the career you think is right for you now, do not be afraid to make a change if you discover that it is not suited to your interests and abilities.

Labor experts predict that in the near future people may change careers several times in a lifetime. This will be caused partly by changing technology, which will eliminate some jobs and make it necessary for people to retrain for new ones.

As people mature, their values and goals often change, and they may become unhappy with their chosen career. Although they may be successful, it does not give them the inner satisfaction they long for. A decision to switch to another career after years of work in one field is not made on the spur of the moment. It requires careful analysis of the person's talents and skills. Career areas must be researched to determine where these abilities may be used.

Today, colleges, universities, and other adult education institutions report an increase in enrollment of adults over forty years of age—people who have decided to change careers.

How To Choose a Career

How should you go about selecting a career? Begin with your abilities, talents, and interests. For instance:

- Do you have a talent in a particular area, such as working with your hands or in science or music?
- Do you have a keen interest in a certain activity, such as preparing food?
- Do you enjoy helping people or teaching?
- Do you prefer to work alone or do you enjoy being with people most of the time?
- Are you a leader or do you prefer to let others make the decisions?

- Is your main objective to make money? Would you be happy serving humanity, even if you didn't make much money?
- Do you want to remain in your community or do you prefer a job that involves travel?
- Is your main interest a job with life-long security or would you prefer to move around as you advance in your career?

Your answers to these questions can give you a clue to the type of career to pursue. For instance, you may find a fulfilling career in food and nutrition if you:

- *Enjoy working with people.* Most jobs in food and nutrition involve working with people. You may be serving food in a cafeteria, explaining a new product to a customer, or encouraging young parents to serve more nutritious meals for their family. You will be working with people from all income and age levels and ethnic groups.
- *Are in good health.* Most jobs require stamina and hard work. Food service workers, for instance, must be on their feet all day and work long hours. Home economists in business work long hours, including weekends, keeping consumers informed on the selection, use, and care of the products they represent.
- *Appreciate good health.* Good eating habits and good health go hand in hand. To be involved in food and nutrition, you need to understand the importance of good food habits in relation to health. Your own good health and enthusiasm can help you to motivate people to improve their eating habits.
- *Appreciate good food.* Food industries and food service establishments usually pride themselves on the quality of their products, meals, and services. If you recognize and appreciate good food and consider it more than just something to eat, you may enjoy working in the food industry.



Marriott Corp.

People who enjoy creative food preparation might want to investigate career opportunities in the food service industry.

- *Have good work habits.* In many of the jobs, you make up your own schedules and are responsible for meeting them. To do this, you need initiative, self-discipline, and the ability to get your assignments done on time without prodding.
- *Are ambitious.* The opportunities in food and nutrition are limitless, but they depend on you. You can work your way from a kitchen helper to a manager if you use your abilities and opportunities for additional education. Most organizations in food and nutrition prefer people who are ambitious—there is plenty of room at the top for young men and women.

If you think you may be interested in a career in food and nutrition, begin now, while you are still in high school, to develop a good educational foundation. Of course, you should have as many courses in food and nutrition as you can. Perhaps you think that is all you will need, but those courses are only the beginning.

Most jobs, even at beginning levels, involve not only working with people but keeping records as well. This means you must know how to communicate both in speech and in writing. Record-keeping usually involves mathematics and management.

Let's take, as an example, Sandy, who waits on tables. When customers are seated at her table, she greets them pleasantly. She writes their food orders down on the cashier's checks and gives them to the cook. When the food is ready, Sandy serves it to her customers. Throughout the meal, she makes sure her customers are well supplied with water, beverages, rolls, butter, and condiments. She periodically checks to be sure everything is all right. She makes sure her customers are satisfied with the food and are having an enjoyable meal. At the end of the meal, she totals the checks and hands them to the customers.

What educational background, besides a knowledge of food service, must Sandy have to provide such good service? How can some of the courses you take, such as English, speech, math, and personal relationships, be helpful to you in a food and nutrition career?

Let's Explore and Report

- Make up a list of your abilities, talents, interests, and educational background. Keep the list for use later in this chapter.

CAREER OPPORTUNITIES

Look for these terms

caterer
customer service
food preparation
home economics
management
paraprofessional
registered dietitian (RD)
sanitation
specialize

Careers in food and nutrition include those in the food service industry and home economics. In these fields you can find beginning jobs for high school graduates as well as more advanced jobs for people with vocational training and university degrees.

Food Service Industry

If you enjoy working with food and with people, the food service industry may be just the career you are looking for.

Although conditions may vary in different areas, job prospects in the food service industry appear bright. Currently, one of every four meals in the United States is eaten out. Experts predict that within the next few years, one of every three meals will be eaten out.

As the trend to eating out increases, more new food service establishments must open. This means more new jobs. The food service industry currently employs almost four million people. Every year, it will need approximately 250,000 additional employees to provide replacements and fill new openings.

TYPES OF JOBS AVAILABLE

You can have a career in one of the four major areas of food service, depending on your interests, education, and goals. These include food preparation, customer service, sanitation,

and management. As a rule, management jobs call for education beyond high school. However, you can work your way up to management jobs through experience and on-the-job training.

- *Food preparation jobs* involve working in the kitchen, preparing food for customers. In small restaurants, you may do a variety of food preparation, wherever your help is needed. In a large kitchen, however, you may *specialize*. This means you will be assigned to a certain job and become skilled in it. For instance, you may prepare only salads or work as a baker's helper. Generally, people beginning in food preparation start out as assistants to the more experienced workers in the kitchen. As you gain experience, you may move up the career ladder to jobs such as assistant cook, cook, or chef. It usually takes years to master the skills needed to become a chef.



Culinary Institute of America

Restaurants offer many opportunities for careers in food service.

- *Customer service* means serving food to the customers, or related jobs such as clearing tables. You may work in a dining room, in which case you carry plates of food on trays from the kitchen to your serving area. Some restaurants have busboys or busgirls, who carry the trays while other employees serve the food. Busboys and girls also clean up the tables and set them for the next customers. You may also work behind a counter or in a cafeteria. Counter workers generally serve food prepared by a cook. In small restaurants, however, they are expected to do some of the food preparation, such as grilling hamburgers or making fountain specials such as ice cream sodas. As you gain experience, you may advance to such jobs as cashier, head waiter, hostess, assistant manager, and manager.
- *Sanitation* involves cleaning and maintenance. It includes the dishes, kitchen, and equipment. Dishes are usually washed in an automatic dishwasher, but pots and pans must generally be scrubbed by hand. Since the health of customers is of greatest importance, rules of sanitation must be observed. The area must be kept clean and free of pests such as insects and rodents. Foods must be stored at proper temperatures and under correct conditions. From



"Feasting with Falicia," Mt. Prospect, Ill.

This home economist arranges group lunches in ethnic or gourmet restaurants. Then she presents a lecture-demonstration showing how the foods served at the lunch were prepared. She also gives food preparation classes and serves as a party adviser.

beginning jobs, you can advance to positions such as supervisor.

- *Management* jobs include owners, managers, supervisors, executive chefs, dietitians, and assistant managers. These people hold responsible positions, usually supervising a number of employees. Some management jobs, such as a dietitian, require a college degree. Other positions can be reached through hard work and management training programs.

You can work in many kinds of establishments: fast-food service units, cafeterias, counter service restaurants, family restaurants, elegant gourmet establishments, or hospital kitchens. Many factories also have food service for their employees. School lunchrooms provide many opportunities for employment.

ADVANTAGES AND DISADVANTAGES

Like all careers, work in food service has many advantages as well as disadvantages.

Advantages:

- Entry-level jobs can be stepping stones to a lifelong career, either as an employee or in running your own food service business.
- You can select jobs in any location most of the time.
- If you do a good job, you can expect to make reasonably good wages, once you are trained.
- As a rule, you can always find a job.
- Working conditions are generally pleasant. Many restaurants are modern and air conditioned. Employees usually try to work together to provide quality service for customers.
- Opportunities are available for advancement.
- Part-time jobs can be had in most establishments, allowing you to have flexible working hours.

Disadvantages:

- You may have to work evenings or on weekends and holidays.
- Many of the jobs involve hard physical labor. Large amounts of food must be handled in food preparation and heavy trays must be carried when serving customers. You must be on your feet most of the time.
- Since most people want to have their meals within certain time periods, you will have to work under pressure.

HOW CAN YOU ADVANCE?

If you have the interest, skills, and determination to succeed, the opportunities in food service are unlimited.

Once you gain experience, for instance, you may open your own restaurant or have your own catering service. A *caterer* provides food for special meal functions in people's homes or in banquet halls for events such as weddings, and for organizations and club groups. Many people have successful careers baking cakes for weddings and other special occasions.

If you are ambitious, hard working, and show the necessary ability, you may be eligible for management training programs.

If you decide on food service as your career, you can advance in a number of ways:

- *Beginning jobs.* Many employers have training programs for beginning employees. You can take courses at vocational schools or community or four-year colleges that may help you progress.
- *Vocational training.* If you have graduated from a vocational school, you will have added opportunity for advancement as you gain experience in your work. You will often be able to start at a more advanced job level.
- *Community or four-year colleges and universities.* College courses can prepare you for management positions in the food service industry.
- *Management training programs.* Many food service operations have their own management training programs. While



FHA

Students train in county nursing home kitchen.

Instructor in post high school food preparation class shows students proper food preparation techniques. Training such as this can help you start in a food service career at a more advanced level.

Culinary Institute of America





The Methodist Medical Center of Illinois, Peoria, Ill.

Dietary assistant helps prepare trays for patients.

trainees do not always have to be college graduates, they must have specific qualifications before they are accepted. These vary with each organization.

FOR ADDITIONAL INFORMATION

If you are interested in a food service career, you may get additional information by writing to the following:

Council on Hotel, Restaurant and Institutional Education (CHRIE), Suite 534, 1522 K Street, Washington, D.C. 20005.

National Institute for the Food Service Industry, 120 South Riverside Plaza, Chicago, Illinois 60606.

National Restaurant Association, One IBM Plaza, Suite 2600, Chicago, Illinois 60611.

Let's Explore and Report

- Select one of the job areas in food service of interest to you. Interview several people employed in this field. What education do they have? What are their goals? How do they expect to achieve their goals? How can their experiences help you?
- Make up a career ladder for these three areas in food service—food preparation, customer service, and sanitation. At each level of progress indicate the additional education, if any, required for further advancement.

Home Economics

Home economists work to improve products, services, and practices that affect the health, comfort, and well being of families and individuals. They are involved in fields such as education, dietetics, nutrition, government, extension, consumer affairs, business, communications, and research.

For success in any of the home economics areas, you should be able to work with people from different cultural backgrounds and with various age and income levels. You should have a capacity for leadership as well as an ability to write and speak comfortably in

public. Good grooming and poise are also essential.

Careers in home economics require a college education. Some jobs, however, are available for paraprofessionals.

PARAPROFESSIONALS

People employed as *paraprofessionals* work as assistants to professional home economists. They do not need a college degree. However, they must have interest and ability in their work. They are trained on the job or in special training centers. Educational requirements for paraprofessionals vary greatly, depending on the type of work they do.

Home economists in business, communications, and consumer affairs often use paraprofessionals. In this area, paraprofessionals work with the professionals, helping to prepare for food and equipment demonstrations and evaluating products. They also work as food processing technicians.

The cooperative extension service employs extension aides to help teach good nutrition to those who are poorly nourished. The aides are trained and supervised by professional home economists. Aides work in their home areas where they understand the people and their problems. They show homemakers how to buy the most food value for their money or food stamps and how to prepare nutritionally complete meals. Often, food and nutrition are related to many other family problems. This means the aides often must first help families learn how to manage their limited resources.

Paraprofessionals can also work as food analysts and assistants, classroom aides, food service supervisors or managers, and dietary aides and technicians in hospitals. They can work in preparing, packaging, and delivering food for airlines, or they can demonstrate food products.

If you are interested in working as a paraprofessional in any of the home economics areas, see your school counselor for information. You can also write to:

Future Homemakers of America (FHA/HERO), 2010 Massachusetts Avenue, NW, Washington, D.C. 20036.

American Dietetics Association, 620 N. Michigan Avenue, Chicago, Illinois 60611.

American Home Economics Association, 2010 Massachusetts Avenue, Washington, D.C. 20036.

American Vocational Association, 1510 H Street, NW, Washington, D.C. 20005.

EDUCATION

As a home economist in education, you can help young people gain the basic skills and knowledge they need for their future homes as well as for careers. You can also help adults prepare for changes in their careers as well as helping them to progress in their current jobs. You can teach at different grade levels, from elementary school to adult education.

You will need at least a bachelor's degree to teach in schools and a minimum of a master's degree to teach in a college or university. If you wish, you may specialize in certain areas, such as food and nutrition, communications, or consumer affairs.

You may teach in a school or work in rehabilitation or as an administrator. Many teachers expand their careers by writing educational materials or working for industry as consultants.

DIETETICS

Dietetics can be a rewarding career in health with a focus on nutrition. You can work in several areas of dietetics:

- *Nutrition Care.* As a hospital dietitian, you will be part of the medical team, working with patients. You will work with people of all ages, incomes, and cultural backgrounds, helping them to achieve the best nutrition for them.
- *Administration.* Dietitians are often employed in food service as administrators, planning meals and supervising kitchens. They are responsible for cost control, training and supervising personnel, and developing high standards for purchasing food and equipment.

Begin Now
To Plan Your Home Economics Career

Nearly 400 universities and colleges throughout the country offer degree programs in home economics. You may select a major in any one of these areas:

- **arts**
- **child development**
- **clothing**
- **communications**
- **dietetics**
- **education**
- **family economics**
- **family relations**
- **food and nutrition**
- **home management**
- **housing**
- **household equipment**
- **institution administration**
- **textiles**

For more information, see your high school guidance counselor or home economics teacher.

• *Education.* Dietitians plan and conduct educational programs for medical, nursing, and dental students and others in allied health careers. The teaching dietitian may be employed by a college, university, or medical school.

• *Research.* Dietitians in research usually work as part of a team in studies conducted in hospitals or medical centers. Some also work in business organizations, with food processors, and with independent food research teams.

To be a dietitian, you must be a graduate of a college or university offering a program in dietetics. This is followed by an internship in a hospital, college, business, or industrial organization. Once you are professionally trained and fully qualified, you can become a registered dietitian (RD). Registration is established by successful completion of a national examination after becoming a member of the American Dietetic Association.

Opportunities for dietitians are promising. Qualified dietitians are needed to plan and supervise food service programs. As more hospital and nursing care facilities are established, the need for dietitians increases. Employment opportunities continue to increase in hospitals, schools, industrial food services, day care centers, and community agencies.

NUTRITION

Nutritionists are directly involved in nutrition education programs rather than in food supervision. They try to help people change their food habits to more healthful ways by conducting classes and counseling individuals. These activities are carried out through personal interviews, clinics, classes, community programs, and on radio and television programs. Nutritionists are greatly needed by public health agencies, private health organizations, community service organizations, colleges, hospitals, and clinics.

To work as a nutritionist, a master's degree is usually the minimum educational requirement, with a Ph.D. desirable.

GOVERNMENT

Home economists in government help people to understand their nutrition needs. They try to help people change their eating habits to meet these needs. Home economists are often involved with feeding programs all over the world.

Federal, state, and local governments employ home economists to help clients with their food and nutrition problems. The Food and Nutrition Service of the U.S. Department of Agriculture is basically concerned

with the administration of the federal food programs, such as the school breakfast and lunch programs, and special assistance programs.

State and local governments employ home economists to help welfare clients manage their home situations.

International jobs are also available with agencies such as the United Nations and the Peace Corps.

EXTENSION SERVICE

Home economists who work for the cooperative extension service conduct programs for men and women as well as for youths, such as 4-H club members. They have classes in subjects such as home management, consumer education, family relations, and nutrition. They also train and supervise volunteers and paid aides who assist them with programs, such as nutrition aides.

To work as a home economist in extension, you must have a bachelor's degree, but a master's degree is desirable. Extension service home economists work in most counties in all states.



The Methodist Medical Center of Illinois, Peoria, Ill.

Dietitians plan menus for patients, based on physicians' instructions.

CONSUMER AFFAIRS

As the emphasis on consumerism increases, more government agencies and private industries are hiring home economists.

Home economists may work in agencies such as local and state consumer affairs agencies, the Federal Trade Commission, and the Food and Drug Administration. As part of their job, they communicate information to the consumer, follow up on consumer complaints, and investigate deceptive practices.

Manufacturers and trade associations also employ home economists to handle their consumer relations. The home economists prepare informational materials, advising consumers how to select products wisely, and get the best possible use from them.

More and more supermarkets employ home economists. They help guide management poli-

cies relating to consumer affairs and help promote products and services. They work with management to improve store services and attract more customers.

Usually, a bachelor's degree is required to work in consumer affairs. Specialization may also be required, but this depends on the job. For instance, a company in the food industry may prefer a home economist with a degree in food and nutrition to handle its consumer affairs.

BUSINESS

Thousands of home economists are employed by private business firms, utilities, and trade associations to promote the selection, use, and care of specific products. They are the link between the consumer and the industry. They help consumers select, use, and care for the products they represent. In addition, they study consumer needs and help manufacturers translate those needs into useful products.

As part of their jobs, the home economists in business may prepare radio and television programs; demonstrate products; and conduct classes for sales and service personnel and consumers. They may be involved in research, testing products, food photography, and preparing advertisements, consumer literature, and instructional materials.

Home economists are employed by food manufacturers to work in test kitchens or laboratories. They help improve products and create new ones. Equipment manufacturers employ home economists to present their products to consumers and to assist engineers in product development.

Home economists in business usually travel considerably, especially if they are promoting a product on a national basis. Some are hired to cover only a certain territory, such as several states, but must travel a great deal within that territory.

To work as a home economist in business, you will need at least a bachelor's degree.

COMMUNICATIONS

Home economists in communications are usually employed by the media—newspapers, magazines, publishers, television and radio stations, and public relations and advertising agencies. They prepare advertisements, articles, and speeches about consumer products and services. They may also test and analyze products and study consumer buying habits. They try to keep the consumers informed of the latest developments in the field of consumerism, including government regulations and legislation.

Home economists in communications should be able to work with people. They must also be willing to meet job deadlines.

A job in communications generally requires a bachelor's degree in home economics communications.

RESEARCH

Home economists involved in research help to develop new products and new uses for existing ones. They may be employed by private industry, by universities, or by the federal government.

As a rule, a master's degree is required but a Ph.D. is desirable.

FOR ADDITIONAL INFORMATION

For additional information on home economics careers, write to:

American Dietetic Association, 620 North Michigan Avenue, Chicago, Illinois 60611.

American Home Economics Association, 2010 Massachusetts Avenue, NW, Washington, D.C. 20036.

Future Homemakers of America (FHA/HERO), 2010 Massachusetts Avenue, NW, Washington, D.C. 20036.

U.S. Department of Agriculture, Division of Home Economics, Washington, D.C. 20250.

Local Cooperative Extension Service



Jewel Companies, Inc.
Many supermarkets employ home economists as consumer affairs specialists.



Corning
This home economist works as a product analyst for a housewares manufacturer.



Reprinted from Better Homes and Gardens. © *Meredith Corp., 1975. All rights reserved.*

Home economists in test kitchen of national magazine prepare a cake to present to a taste test panel. Another home economist works with photographer, preparing to shoot a "how-to" step in making the cake.



Let's Explore and Report

- Select a home economics career you might be interested in pursuing. Research the qualifications needed. How do these compare with the list you made up earlier in this chapter? Research the educational requirements needed and the employment outlook. What kind of part-time job during high school might help you gain experience for this career? What scholarships, grants, loans, or other funds would be available to help you continue your education after you graduate from high school?

What Would YOU Do?

- In attempting to select a career, you have reached an important conclusion. You enjoy working with food. Thus you feel that a job in the food service industry would be most suitable for your interests. You decide to get a job in food service right after graduating from high school. You want to work a year or two, just to be sure your career choice is the right one for you. You will also be able to earn money to pay for a college education. Your family members and relatives are trying to encourage you to go to college immediately upon graduating from high school, even though you are not sure of your career choice. Your family promises to pay your tuition. They argue that if you wait, you will never get a higher education and you will probably be stuck with a low-paying job for the rest of your life.



Chapter 28

How To Get and Keep a Job

To help you to . . .

- **Know the different sources you can use to help you find a job.**
- **Secure work experience while you are still in school.**
- **Develop a resume and fill out an application blank.**
- **Apply the necessary steps to take for an interview.**
- **Identify the type of behavior that can increase your worth as an employee.**

How do you go about getting and keeping that important first job on your career ladder? Your first step is to know where to look for a job. When you learn of a job opening, you will also need to know how to apply for the job.

Look for these terms
Help Wanted ads
private employment agencies
state employment agencies

WHERE TO LOOK FOR A JOB

When you are trying to find a job, several sources can be useful to you. These include your school placement office, newspaper *Help Wanted* ads, and employment agencies, as well as other sources.

Marriott Corp.
Getting the right job can be a very big step in your progress on your career ladder.

School Placement Office

Usually, your school placement office will have a list of part-time jobs for students as well as full-time beginner's jobs in different career areas. The counselor can guide you in your search for a job.

Help Wanted Ads

Most newspapers have a classified advertising section which includes *Help Wanted* advertisements. These ads are placed by employers who are looking for employees. The ads may state such facts as starting salaries, how and when to apply for the job, working hours, and qualifications desired, such as "experience preferred." See the sample advertisements on page 486.

The ads are generally listed in alphabetical order according to the first letter of the first word. When you are job hunting, be sure to read *all* of the advertisements, and not just the section where your category might be listed. Why? Ads are not always written the same way. For instance, if you want a job as a busboy or busgirl, you might be inclined to just look under the "B" listings. However, the job may be listed in another part of the column because the ad may read, "Need part-time busboy/girl." Thus it would not appear under "B" but under "N."

CAFETERIA

Two openings for mature women as Cafeteria Line Servers. No late nights, alternate weekends. Fringes include profit sharing, paid holidays, insurance. MANCHESTER INN, 7708 N. College

---

COOK for 52 bed residential facility. Own transportation. Experience desired. Call 631-6700 for appointment, between 8 & 4:30 weekdays.

COOK experienced in short order & buffet cooking. 5 or 6 day week. Apply in person to Manager
OAK CLUB

MANAGER TRAINEE–Fast Food exp. helpful Exc. trng. prog. Good future. $8600 ACME AGENCY, 7173rd Nat'l Bank Bldg., 891-6051. Private Employment Agency.

MEAT BUYER

For wholesale grocery warehouse. Experience necessary in either retail or wholesale meats. Call George Williams for appointment 8 a.m. to 4:30 p.m.
616-305-5353
Acme Grocery Co.

JACK'S PLACE

Jack's Place is now hiring for all positions. Full and Part Time, all shifts. We offer a high starting pay and a fun atmosphere to work in for the right people. Apply in person. You must be 16 to apply.
JACK'S PLACE
7501 N. Ellis
Larimer Square

LUNCH & DINNER
COOKS
BUSBOYS
BARTENDERS
HOSTESSES
COCKTAIL WAITRESSES
APPLY IN PERSON
RAMS HEAD
N. Rt. 116
Between 2 and 4 P.M.
Equal Opportunity Employer

DONUT SALESLADY

Age over 21, second shift 4 P.M. to 11:30 P.M., 5 days per week. Thursday & Friday off. Apply in person
WORLD DONUT
613 N. Main

WAITRESS WANTED
Experienced Only.
Apply in person before 3:00.
No Phone Calls Please.
SICILIAN RESTAURANT
145 S.W. Adams

WAITERS–WAITRESSES
APPLY IN PERSON
Between 1:00 & 3:00
THE MAPLE TREE
Route 150
Ph. 819-4561

WANTED Mature adult women 4–11 p.m. Apply in person CRISPY CHICKEN, 601 W. Washington.

FOOD MANAGEMENT

Our expansion plans call for the addition of one Manager and 2 assistants to staff two new family steakhouse restaurants.

We will fill these positions with men and women who sincerely believe in giving the public the quality they deserve. In return, those men and women will receive:

- Thorough Training
- Advancement In Step With Performance
- $250,000 Medical Coverage
- Dental and Life Insurance
- Profit Sharing
- Quarterly Bonus
- Job-Independence As Earned

CALL JEROME ADLER

205-9317

For an Interview Appointment

"Help Wanted" advertisements in local newspapers usually offer a wide range of jobs in food service. These jobs appeared in the Sunday edition of a newspaper in a small midwestern city.

ANSWERING WANT ADS

Answer only those ads for job openings for which you think you are qualified. If the ad calls for an experienced cook and you have only worked as a part-time salad maker, do not waste your time and the employer's by applying for the job. On the other hand, if an advertisement does not mention experience, the employer may be willing to train a beginner. In that case, apply for the job, being sure to let the employer know that you are a beginner but willing to learn.

Follow the instructions in the advertisement. For instance, if a job for a dishwasher states to "call between 2 and 4 P.M.," be sure to do so. Do not call at any other time. The manager may have specified the slow periods for phone calls and will not have time to talk to you during peak hours of service.

If a phone number is given, call and be brief. Give your name and express your interest in the job. Have in mind specific times when you will be available for an interview and those times when you definitely cannot be available. If the person in charge of hiring cannot talk to you when you call, leave your name and phone number.

Some ads request job prospects to apply by letter. Make your letter brief. State you are inquiring about the job advertised in the paper. Explain you are enclosing a copy of your resume (see page 491) and that you will be available for an interview at certain times. Be sure to include your address, phone number, and the hours when you can be reached by phone. See sample letter on this page.

6705 N. South
Chicago, Illinois 61600
January 13, 19__

Jones Food Service
One Street
Chicago, Illinois 61600

Gentlemen:

I would like to apply for the job as dishwashing assistant, as advertised in the January 12 issue of the News.

Enclosed is a resume of my educational background, part-time work experience, interests, and references.

I am available for an interview any afternoon after 3:30 p.m. and on weekends.

You can reach me by phone at 573-4454 after 3:30 p.m.

I look forward to hearing from you.

Sincerely,
Jack Claibourne

Sample letter of application for a job.

Employment Agencies

Employment agencies are organizations that specialize in helping people find jobs and in helping employers find workers. There are two kinds of employment agencies—state and private.

- *State employment agencies* are a service of your state government and do not charge a fee. Besides referring you to job openings, they also have a counseling service. If you have doubts about your suitability for a career area you've chosen or about the type of career you would like, the agency can help you through counseling and tests. You will find offices located in your community or nearby.
- *Private employment agencies* charge a fee for their services, usually a percentage of your salary. Sometimes the employer agrees to pay the fee. If you decide to look for a job through an employment agency, you will have to sign a contract agreeing to pay the fee. Be sure you read the contract thor-

RESUME

Jack Claibourne
6705 N. South
Chicago, Illinois 61600
Height: 5'10"
Weight: 179 pounds

Birthdate: January 12, 19__
Birthplace: Laramie, Wyoming
Phone No.: 123-4567
Social Security No.: 300-00-000

Education: Student at Jay High School in vocational education. Enrolled in food service course.

Work Experience: Dishwasher in school lunchroom, part time, during junior year.

Special Interests: Preparing food—like to cook at home.
Music—play trombone in school orchestra.
Hiking.

References:
Dr. Barry Wright, 212 Society Building, Chicago, Illinois 61600. Phone: 584-0001
Mrs. Elsie Cox, School Lunch Manager, Jay High School, 1101 Redfers, Chicago, Illinois 61600. Phone: 532-0100, Ext. 33
Jim Phelps, 6703 N. South, Chicago, Illinois 61600. Phone 123-6789

oughly and understand the terms *before you sign.* You may want to check the agency's reputation with the Better Business Bureau.

Other Sources of Jobs

Friends and relatives can often give you information about job openings. Perhaps some of them are employed in the career area in which you are interested. Let them know you are looking for a job. Then, if an opening occurs in their place of business, they will let you know.

Some businesses, especially small restaurants, do not advertise in newspapers but may place signs in their windows when they need help. Ask your friends and relatives to be on the lookout for such signs.

Experience Preferred

What can you do when you are looking for your first full-time job and the ads specify, "Experience preferred"? You can look ahead now and gain some work experience while you are still in school by working part time or doing volunteer work.

- *Part-time jobs.* Look for jobs in your chosen field, if they are available. If you are interested in food, you may try to get a job with a caterer or in a restaurant. No matter how small the job may seem, it will help you to understand a little better what is involved in the overall operation. As you work, you will be aware of the details that require attention. For instance, your job may be to wash dishes in a coffee shop. It may seem like routine work, but you can observe the techniques involved. You will become familiar with the need for sanitizing dishes and the importance of cleanliness and sanitation. You will be aware of the need for organization and planning so foods as well as dishes are ready when needed. No matter how small the job, it can help you gain valuable experience for future employment.
- *Volunteer work.* If part-time jobs are not available, volunteer work can help you gain valuable experience. For instance, if you are interested in dietetics, you might volunteer as a hospital worker, helping to feed patients, or as a day care center worker, helping to feed children. Agencies such as the Red Cross have nutrition programs using volunteer help. Nutrition programs in your community, such as Meals on Wheels, may need volunteer workers. Although you will not be paid for this work, you will be amply rewarded through the service you perform and the experience you gain.

Let's Explore and Report

- Look through the *Help Wanted* ads in your local news-

paper. Cut out all of the ads which relate to jobs in food and nutrition. Make up a poster. Classify the advertisements as beginning and those requiring experience or advanced education. Save the poster for use later in this chapter. For the jobs requiring experience, what kind of part-time job or volunteer work could you do now to help you gain some of the experience?

- Survey some of the community agencies and hospitals in your area. Which have volunteer work available involving food and nutrition? Make up a bulletin board, listing the volunteer help needed along with qualifications, if any, and hours.

Look for these terms
application blank
health certificate
interview
references
resume
Social Security number
work permit

GETTING THE JOB

Getting a job involves a number of steps. These include having specific information the employer needs as well as being interviewed by the employer.

Information for the Employer

Before you apply for the job, you will need to have a Social Security number. If you are still in school, you will also need a



American School Food Service Association

Students from senior high food preparation class work part-time in the school lunchroom.

The Methodist Medical Center of Illinois, Peoria, Ill.

Volunteer work can help you gain valuable experience that you may use in future jobs. Here a meal tray receives a last-minute inspection as a volunteer carries it to the patient.

These volunteers are helping to cook corn on the cob in large quantities at an ethnic festival.

Institute of Texan Cultures



work permit. You may need a health certificate for certain jobs in food service. You should also make out a resume.

• *Social Security number.* Before you begin to work even part time, you must have a Social Security number. You can secure one from the nearest Social Security office. This number is assigned to you when you first begin to work and stays with you through life. What is Social Security? It is a federal insurance program which provides money for your retirement. However, it will also help to support your

ID CN DO

APPLICATION FOR A SOCIAL SECURITY NUMBER 487

DO NOT WRITE IN THE ABOVE SPACE

See Instructions on Back. Print in Black or Dark Blue Ink or Use Typewriter.

1 *Print* FULL NAME YOU WILL USE IN WORK OR BUSINESS (First Name) (Middle Name or Initial – if none, draw line ___) (Last Name)

2 *Print* FULL NAME GIVEN YOU AT BIRTH

3 PLACE OF BIRTH (City) (County if known) (State)

4 MOTHER'S FULL NAME AT HER BIRTH (Her maiden name)

5 FATHER'S FULL NAME (Regardless of whether living or dead)

6 YOUR DATE OF BIRTH (Month) (Day) (Year)

7 YOUR PRESENT AGE (Age on *last* birthday)

8 YOUR SEX MALE ☐ FEMALE ☐

9 YOUR COLOR OR RACE WHITE ☐ NEGRO ☐ OTHER ☐

10 HAVE YOU EVER BEFORE APPLIED FOR OR HAD A UNITED STATES SOCIAL SECURITY, RAILROAD, OR TAX ACCOUNT NUMBER? NO ☐ DON'T KNOW ☐ YES ☐ (If "YES" PLACE in which you applied and DATE you applied and SOCIAL SECURITY NUMBER if known)

SAMPLE

11 YOUR MAILING ADDRESS (Number and Street, Apt. No., P.O. Box, or Rural Route) (City) (State) (Zip Code)

12 TODAY'S DATE

13 TELEPHONE NUMBER

14 NOTICE: Whoever, with intent to falsify his or someone else's true identity, willfully furnishes or causes to be furnished false information in applying for a social security number, is subject to a fine of not more than $1,000 or imprisonment for up to 1 year, or both.

Sign YOUR NAME HERE (Do Not Print)

TREASURY DEPARTMENT Internal Revenue Service FORM SS-5 (5-74)

☐ RESCREEN ☐ ASSIGN ☐ DUP ISSUED

Return completed application to nearest SOCIAL SECURITY ADMINISTRATION OFFICE

Application blank for Social Security number.

dependents, should anything happen to you. Both you and your employer contribute to your Social Security fund. Deductions are made from each pay check, under the heading FICA (Federal Insurance Contribution Act). For this reason, the employer must have your Social Security number so payments can be credited to your account. If you should lose your Social Security card, you can apply at the Social Security office for a replacement. The new card will have the same number as the old one. Since you have the same Social Security number throughout life, take time to memorize it. Then you will not have to carry the card with you and risk losing it.

- *Work permit.* State laws require young adults under 18 years of age to have a work permit before they can begin a job if they are still in school. The work permit, issued by the local board of education, tells the employer the age of the student and that the student is still attending school.
- *Health certificate.* If you are applying for a job in food service, you may need a health certificate. Local health boards require this of all food service employees. In order to get a certificate from the health board, you will have to have a physical examination. However, the employer usually will pay for the examination. The health certificate tells the employer you are in good health and free from communicable diseases.
- *Resume.* See page 488. A resume is sometimes called a personal data sheet. It lists facts the employer may want to know about you. It is a brief summary of your educational background, job and volunteer work experience, and special interests. It also includes *references*—names, addresses, and phone numbers of people who know you well and who can vouch for your character. Your physician, minister, or close

family friends can be references. Usually, employers will not accept a relative as a reference. Be sure to ask your friends for their permission to use their names as references. Do not assume that just because they are close friends they will be willing to give you a reference. When you go on a job interview, always take a resume with you. It provides the information you need to fill out the application blank so you do not have to rely on your memory. When you apply for a job by letter, enclose the resume to give the employer an idea of your qualifications for the job.

You can make an impression on the interviewer if you know something about the company where you are applying. Use library resources to learn information of the company's background, such as the product they manufacture or the services they perform. If you are applying for a job in a restaurant, secure several of their menus and become familiar with the type of food they offer. Interview several people who have eaten there, to learn something about the restaurant. You may even want to eat there yourself, if you can. The initiative you show in securing this information will tell the interviewer you are interested in the job.

The Interview

An *interview* is a meeting between you and a representative of the organization, either the personnel manager or someone in charge of hiring. In a small establishment it may be the owner or the supervisor of the department.

Generally, you will have to make an appointment for the job interview. Some businesses, however, interview without an appointment.

Employers expect employees to be punctual, so be on time for the interview. Allow ample time to get to the place of interview, whether you drive or use public transportation. It's better to be a little early than late. If something unforeseen occurs and you may be a little late, call the interviewer as soon as you can and briefly explain the circumstances. If you are one of many appointments, the interviewer may prefer to schedule you for another day.

Before you leave for the interview, be sure you take the following with you:

- The name and address of the organization and the name of the interviewer, if you have it. Know how to get to the location.
- Your Social Security number, work permit, and health certificate, if needed.
- Your resume.
- Several blank sheets of writing paper.
- A pen that writes well. This will help you to have confidence as you fill in the application blank—you will know the pen will write without splotching.
- A pocket dictionary, if you have problems with spelling.

Take extra care with your appearance. Even if the job is in the stockroom, don't wear grubby, unkempt clothes. Be neat, clean, and well groomed. A job interview is not the time to display your liking for the latest fashion fads. Remember, an employer must judge you in a relatively short time—perhaps in less than an hour. Thus first impressions are important. Your appearance helps the employer decide whether you would be a good employee.

When you arrive for the interview, give your name and the appointment time to the receptionist. While you wait for the interview, you will probably be asked to fill out an application form.

The application form (see sample on page 494) gives the employer information about you—your educational background, your work experience, special interests, and references. This is where your resume will come in handy—you can refer to it as you fill out the application blank.

When you fill out the application blank, use your own pen. Write or print neatly so the interviewer can read it. Many employers judge applicants by the way they fill out the application blanks. Take your time. Read each question thoroughly first,

and then answer it. Think through your answer before you begin to write. Use the blank paper you brought with you to write out the answer first, if you wish. Then, when you are sure that is what you want to say, copy the answer on the application blank.

You will probably be a little nervous when you go in for the interview. Try to relax and be yourself. Sit comfortably in a chair without fidgeting. Answer the questions pleasantly and briefly. Do not go into long discussions of some of your interests or personal problems. Many applicants have talked themselves out of jobs by not knowing when to stop talking. If you have any questions about the job, ask them during the interview.

Be prepared to answer questions such as:

- How did you find out about the job?
- Why do you want this job?
- What makes you think you are qualified?
- What can you contribute to the job?
- What experience have you had that will make you a desirable employee?
- What are your career goals?

During the interview, you and the prospective employer have an opportunity to become acquainted. The employer learns of your qualifications for the job and your career goals. You, on the other hand, learn what the job involves, what will be expected of you, and what the wages are. You may be taken on a tour of the department and introduced to people who may be your co-workers.

Usually, both the interviewer and the applicant need time after the interview to make a decision. However, if you are offered a job at the end of the interview, you can accept it, if you wish. If you have any doubts, you may indicate you would like a day or two to think it over. Be sure to let the employer know of your decision at the end of that time.

If no decision was reached during the interview, you may want to follow up in a few days. You can call the interviewer or write a letter. In either case, express interest in the job and ask the interviewer if any decision has been reached. You may be told that someone else was hired. It is usually best to drop the matter then, and look for a job elsewhere.

Let's Explore and Report

- Use the poster of want ads you prepared earlier in this chapter. Select one of the jobs for which you might be qualified and apply according to the instructions in the ad. If the ad asks you to phone, have one of your classmates play the role of the employer. Make an appointment for the interview. Make up a resume and explain how you would secure a Social Security number, work permit, and health certificate.
- Make up two posters for job hunters. On one, list those characteristics that might impress an interviewer. On the other, list those that might make an unfavorable impression. Illustrate the posters with cutouts from magazines and newspapers, or with drawings.

HOW TO KEEP THE JOB

What can you do to keep your job? Largely, it's a matter of consideration for others—your employer, the customers you serve, and your co-workers.

Your Employer

Your employer deserves the best you can give as an employee, whether you work a few hours a day or a full day. No matter how small your job, do all you can to achieve top-quality results. Even if you disagree with company policies or practices, do your best. By doing this, you will develop good working habits for future jobs.

Observe the rules of the establishment. If your job involves handling foods—whether you are working in a processing industry or preparing or serving food—observe sanitation and safety rules.

Be punctual and observe the hours set for your job. If you work part time, be sure you

APPLICATION FOR EMPLOYMENT

PERSONAL INFORMATION

DATE _____ SOCIAL SECURITY NUMBER _____

NAME _____ AGE _____ SEX _____
LAST FIRST MIDDLE

PRESENT ADDRESS _____
STREET CITY STATE ZIP

PERMANENT ADDRESS _____
STREET CITY STATE ZIP

PHONE NO. _____ OWN HOME _____ RENT _____ BOARD _____

DATE OF BIRTH _____ HEIGHT _____ WEIGHT _____ COLOR OF HAIR _____ COLOR OF EYES _____

MARRIED _____ SINGLE _____ WIDOWED _____ DIVORCED _____ SEPARATED _____

NUMBER OF CHILDREN _____ DEPENDENTS OTHER THAN WIFE OR CHILDREN _____ CITIZEN OF U.S.A. YES ○ NO ○

HAVE YOU EVER BEEN CONVICTED OF A CRIME? YES☐ NO☐ IF YES EXPLAIN _____

IF RELATED TO ANYONE IN OUR EMPLOY. STATE NAME AND DEPARTMENT _____ REFERRED BY _____

LAST FIRST MIDDLE

EMPLOYMENT DESIRED

POSITION _____ DATE YOU CAN START _____ SALARY DESIRED _____

ARE YOU EMPLOYED NOW? _____ IF SO MAY WE INQUIRE OF YOUR PRESENT EMPLOYER? _____

EVER APPLIED TO THIS COMPANY BEFORE? _____ WHERE _____ WHEN _____

EDUCATION	NAME AND LOCATION OF SCHOOL	YEARS ATTENDED	DATE GRADUATED	SUBJECTS STUDIED
GRAMMAR SCHOOL				
HIGH SCHOOL				
COLLEGE				
TRADE, BUSINESS OR CORRESPONDENCE SCHOOL				

SUBJECTS OF SPECIAL STUDY OR RESEARCH AND DEVELOPMENT WORK _____

WHAT FOREIGN LANGUAGES DO YOU SPEAK FLUENTLY? _____ READ _____ WRITE _____

U.S. MILITARY OR NAVAL SERVICE _____ RANK _____ PRESENT MEMBERSHIP IN NATIONAL GUARD OR RESERVES _____

ACTIVITIES OTHER THAN RELIGIOUS (CIVIC, ATHLETIC, FRATERNAL, ETC.) _____

EXCLUDE ORGANIZATIONS THE NAME OR CHARACTER OF WHICH INDICATES THE RACE, CREED, COLOR OR NATIONAL ORIGIN OF ITS MEMBERS

FORMER EMPLOYERS (LIST BELOW LAST FOUR EMPLOYERS, STARTING WITH LAST ONE FIRST.)

DATE MONTH AND YEAR	NAME AND ADDRESS OF EMPLOYER	SALARY	POSITION	REASON FOR LEAVING
FROM				
TO				
FROM				
TO				
FROM				
TO				
FROM				
TO				

REFERENCES: GIVE BELOW THE NAMES OF THREE PERSONS NOT RELATED TO YOU, WHOM YOU HAVE KNOWN AT LEAST ONE YEAR.

NAME	ADDRESS	BUSINESS OR OCCUPATION	YEARS ACQUAINTED
1			
2			
3			

PHYSICAL RECORD:

LIST ANY PHYSICAL DEFECTS

WERE YOU EVER INJURED? GIVE DETAILS

HAVE YOU ANY DEFECTS IN HEARING? IN VISION? IN SPEECH?

IN CASE OF EMERGENCY NOTIFY

NAME ADDRESS PHONE NO.

I AUTHORIZE INVESTIGATION OF ALL STATEMENTS CONTAINED IN THIS APPLICATION. I UNDERSTAND THAT MISREPRESENTATION OR OMISSION OF FACTS CALLED FOR IS CAUSE FOR DISMISSAL. FURTHER, I UNDERSTAND AND AGREE THAT MY EMPLOYMENT IS FOR NO DEFINITE PERIOD AND MAY, REGARDLESS OF THE DATE OF PAYMENT OF MY WAGES AND SALARY, BE TERMINATED AT ANY TIME WITHOUT ANY PREVIOUS NOTICE.

DATE SIGNATURE

DO NOT WRITE BELOW THIS LINE

INTERVIEWED BY DATE

REMARKS:

NEATNESS		CHARACTER	
PERSONALITY		ABILITY	

HIRED FOR DEPT. POSITION WILL REPORT SALARY WAGES

APPROVED: 1. 2. 3.

EMPLOYMENT MANAGER DEPT. HEAD GENERAL MANAGER

Ramada Inn, Peoria, Ill.

Application blank for employment.



FHA

Doing your best at all times can make your job easier and can help you to make progress in your career.

show up and leave on schedule. Observe company policies such as the times for meals and rest breaks.

If you have complaints, do not gripe to other employees. Instead, go to your supervisor and explain your problem. It's possible the situation may be caused by your misunderstanding of a rule or procedure.

Use materials carefully—they represent a huge investment in dollars. An extra-large portion of food for a friend, a pencil accidentally put in a pocket, or a few cookies nibbled as you serve—all can add up to a loss item in your employer's accounting books. The organization you work for must pay for every item you use on the job—whether it's food or office supplies. Wasted supplies mean wasted money for your employer. If you use supplies wisely, you can help your employer make a profit. Many organizations give bonuses when profits are good.

Your Customers

If you work in the service area of a business, you may come in contact with customers regularly. However, if you are in the food preparation or sanitation area, you may rarely see a customer. If you work in a food processing industry, your customers are miles away from where you work. Nevertheless, you as an employee have a responsibility to the customers the business serves.

Consider yourself in the role of a consumer. How do you feel if you get bad service in a restaurant? Or if you buy a food product and find foreign particles in it? Or if a supermarket clerk is rude to you?

Now put yourself in the role of the employee in these situations. Do you see how you, as an employee, can have a far-reaching influence on customers, no matter how small your role? Employers realize that their employees are the most valuable contact with customers.

Keep in mind, as you work, your responsibility to the customers to:

- Give the best service possible.
- Help make an acceptable product.
- Treat people fairly and with respect.

Your Co-workers

Studies show that inability to get along with co-workers is one of the most common causes of losing a job. Here are guidelines to help you get along with others on the job:

- Observe job regulations. Arrive and leave on schedule. If you break rules and get away with it, you can create unhappy feelings among employees.



Ramada Inn, Peoria, Ill.

Cooperation and hard work by the entire restaurant staff result in this elegant buffet.

Don't expect special considerations unless you have an emergency. In that case, be sure to get approval from your supervisor.

- Do your share of the work. Few things irritate co-workers more than working with someone who does not accept responsibilities. Cooperate. If you have spare time and someone else is extra busy, volunteer to help. You can ease the pressure and make everyone feel better.
- Avoid gossip or becoming involved with cliques or special groups. Try to be friendly with everyone. Remember, you are on the job only a certain number of hours a day. You do not have to develop lifelong friendships with your co-workers. Of course, you may meet people you have much in common with and can develop a friendship. However, do not feel you must be a close acquaintance with everyone. Be friendly, avoid arguments, and stay out of disagreements between others.
- Keep your personal problems to yourself. Everyone has problems, and few people enjoy listening to someone else's. Your employer will not be too happy if you use company time to air your troubles. Leave your problems at home when you start off for work.

Let's Explore and Report

- Interview someone working in a food or nutrition career. Discuss the job, especially some of the problems involved. How many of the problems are caused by people not getting along with each other? For instance, how much of the trouble comes from lack of cooperation, gossip, or personal problems?
- Make a positive and negative chart. On the positive side, list those personal qualities that can help lead you to success on the career ladder. On the negative side, list those that might create problems.

What Would YOU Do?

- You have arrived at a business place to keep an appointment for an interview. You are handed an application blank, which you begin to fill out. It asks for the names, addresses, and phone numbers of previous employers as well as references. Suddenly you discover you forgot to bring your resume with you.

APPENDIX A

Metric System

The metric system is based on the decimal system of numbers, which involves multiples of 10. To go from small units to large or from large to small, you simply move decimal points. It is similar to the currency system used in the United States. A dollar is written as $1.00. Ten cents is $.10 or $\frac{1}{10}$ of a dollar while a cent is $.01 or $\frac{1}{100}$ of a dollar.

In metrics, common units are used to express weights and measures:

gram—mass or weight
liter—volume
meter—length

Prefixes are added to the common units to state specific amounts. The most common prefixes are:

Prefix	Amount
kilo	1000
centi	$\frac{1}{100}$ or .01
milli	$\frac{1}{1000}$ or .001

Examples:

centimeter—$\frac{1}{100}$ or .01 of a meter
milliliter—$\frac{1}{1000}$ or .001 of a liter
kilogram—1000 grams

In metrics, dieters count kilojoules instead of calories. One calorie is equivalent to 4.2 kilojoules. A glass of skim milk has 90 calories, but 378 kilojoules.

Temperatures are measured in Celsius instead of Fahrenheit. In the past, the Celsius system has been known as Centigrade, but the name was changed in honor of the man who invented it. On the Celsius scale, water freezes at 0 °C and boils at 100 °C. Normal body temperature on the Celsius scale is 37 °C.

Rather than spelling out prefixes and common units, the following symbols are generally used:

Prefix	Symbol	Common Unit	Symbol
kilo	k	Celsius	°C
centi	c	gram	g
milli	m	joule	J
		meter	m
		liter	ℓ or l

Using symbols, kilogram is written kg and centimeter cm. All symbols are written in small letters, except those based on a person's name, which are capitalized. Because the symbols are not abbreviations, they are not followed by a period. The symbols remain the same, whether singular or plural:

1 kJ
260 kJ

COMMON EQUIVALENTS

Metric

gram = $\frac{1}{28}$ of an ounce
kilogram = 2.2 pounds
liter = 1.057 quarts
meter = 1.1 yards
centimeter = .39 inch

Customary

ounce = 28 grams
pound = 454 grams
quart = 0.946 liter
inch = 2.54 centimeters

TEMPERATURE EQUIVALENTS

Fahrenheit	Celsius
0° F.	−18 °C
212° F.	10 °C
350° F.	177 °C
375° F.	191 °C
400° F.	205 °C
425° F.	219 °C

APPENDIX B

Food and Nutrition Board, National Academy of Sciences—National Research Council

Recommended Daily Dietary Allowances[1]

Revised 1973

Designed for the maintenance of good nutrition of practically all healthy people in the U.S.A.

	Years From-Up to	Weight (kg)	Weight (lbs)	Height (cm)	Height (in)	Energy (kcal)[2]	Protein (g)	Fat-Soluble Vitamins: Vitamin A Activity (RE)[3]	Fat-Soluble Vitamins: Vitamin A Activity (IU)	Fat-Soluble Vitamins: Vitamin D (IU)	Fat-Soluble Vitamins: Vitamin E Activity[5] (IU)	Water-Soluble Vitamins: Ascorbic Acid (mg)	Water-Soluble Vitamins: Folacin[6] (μg)	Water-Soluble Vitamins: Niacin[7] (mg)	Water-Soluble Vitamins: Riboflavin (mg)	Water-Soluble Vitamins: Thiamin (mg)	Water-Soluble Vitamins: Vitamin B_6 (mg)	Water-Soluble Vitamins: Vitamin B_{12} (μg)	Minerals: Calcium (mg)	Minerals: Phosphorus (mg)	Minerals: Iodine (μg)	Minerals: Iron (mg)	Minerals: Magnesium (mg)	Minerals: Zinc (mg)
INFANTS	0.0–0.5	6	14	60	24	kg × 117	kg × 2.2	420[2]	1400	400	4	35	50	5	0.4	0.3	0.3	0.3	360	240	35	10	60	3
	0.6–1.0	9	20	71	28	kg × 108	kg × 2.0	400	2000	400	5	35	50	8	0.6	0.5	0.4	0.3	540	400	45	15	70	5
CHILDREN	1–3	13	28	86	34	1300	23	400	2000	400	7	40	100	9	0.8	0.7	0.6	1.0	800	800	60	15	150	10
	4–6	20	44	110	44	1800	30	500	2500	400	9	40	200	12	1.1	0.9	0.9	1.5	800	800	80	10	200	10
	7–10	30	66	135	54	2400	36	700	3300	400	10	40	300	16	1.2	1.2	1.2	2.0	800	800	110	10	250	10
MALES	11–14	44	97	158	63	2800	44	1000	5000	400	12	45	400	18	1.5	1.4	1.6	3.0	1200	1200	130	18	350	15
	15–18	61	134	172	69	3000	54	1000	5000	400	15	45	400	20	1.8	1.5	2.0	3.0	1200	1200	150	18	400	15
	19–22	67	147	172	69	3000	54	1000	5000	400	15	45	400	20	1.8	1.5	2.0	3.0	800	800	140	10	350	15
	23–50	70	154	172	69	2700	56	1000	5000	—	15	45	400	18	1.6	1.4	2.0	3.0	800	800	130	10	350	15
	51+	70	154	172	69	2400	56	1000	5000	—	15	45	400	16	1.5	1.2	2.0	3.0	800	800	110	10	350	15
FEMALES	11–14	44	97	155	62	2400	44	800	4000	400	12	45	400	16	1.3	1.2	1.6	3.0	1200	1200	115	18	300	15
	15–18	54	119	162	65	2100	48	800	4000	400	12	45	400	14	1.4	1.1	2.0	3.0	1200	1200	115	18	300	15
	19–22	58	128	162	65	2100	46	800	4000	400	12	45	400	14	1.4	1.1	2.0	3.0	800	800	100	18	300	15
	23–50	58	128	162	65	2000	46	800	4000	—	12	45	400	13	1.2	1.0	2.0	3.0	800	800	100	18	300	15
	51+	58	128	162	65	1800	46	800	4000	—	12	45	400	12	1.1	1.0	2.0	3.0	800	800	80	10	300	15
PREGNANT						+300	+30	1000	5000	400	15	60	800	+2	+0.3	+0.3	2.5	4.0	1200	1200	125	18+[8]	450	20
LACTATING						+500	+20	1200	6000	400	15	60	600	+4	+0.5	+0.3	2.5	4.0	1200	1200	150	18	450	25

FOOTNOTES TO TABLES OF RECOMMENDED DAILY DIETARY ALLOWANCES

[1] The allowances are intended to provide for individual variations among most normal persons as they live in the United States under usual environmental stresses. Diets should be based on a variety of common foods in order to provide other nutrients for which human requirements have been less well defined. See text for more-detailed discussion of allowances and of nutrients not tabulated.

[2] Kilojoules (KJ) = 4.2 × kcal

[3] Retinol equivalents

[4] Assumed to be all as retinol in milk during the first six months of life. All subsequent intakes are assumed to be one-half as retinol and one-half as β-carotene when calculated from international units. As retinol equivalents, three-fourths are as retinol and one-fourth as β-carotene.

[5] Total vitamin E activity, estimated to be 80 percent as α-tocopherol and 20 percent other tocopherols. See text for variation in allowances.

[6] The folacin allowances refer to dietary sources as determined by *Lactobacillus casei* assay. Pure forms of folacin may be effective in doses less than one-fourth of the RDA.

[7] Although allowances are expressed as niacin, it is recognized that on the average 1 mg of niacin is derived from each 60 mg of dietary tryptophan.

[8] This increased requirement cannot be met by ordinary diets; therefore, the use of supplemental iron is recommended.

APPENDIX C

United States Recommended Daily Allowances (U.S. RDA)

The U.S. Recommended Daily Allowances (U.S. RDA's) for vitamins, minerals, and protein were developed from the Recommended Daily Dietary Allowances of the Food and Nutrition Board, National Academy of Sciences—National Research Council (NAS-NRC) by the Food and Drug Administration for use in its nutrition labeling, nutritional guidelines, and dietary supplement regulations.

	Unit	Infants (0–12 mo.)	Children under 4 yrs.	Adults and Children 4 or more yrs.	Pregnant or Lactating Women
Vitamin A	IU	1500	2500	5000	8000
Vitamin D	IU	400	400	400	400
Vitamin E	IU	5	10	30	30
Vitamin C	mg	35	40	60	60
Folacin	mg	0.1	0.2	0.4	0.8
Thiamin (B_1)	mg	0.5	0.7	1.5	1.7
Riboflavin (B_2)	mg	0.6	0.8	1.7	2.0
Niacin	mg	8	9	20	20
Vitamin B_6	mg	0.4	0.7	2	2.5
Vitamin B_{12}	mcg	2	3	6	8
Biotin	mg	0.05	0.15	0.3	0.3
Pantothenic acid	mg	3	5	10	10
Calcium	g	0.6	0.8	1	1.3
Iron	mg	15	10	18	18
Phosphorus	g	0.5	0.8	1	1.3
Iodine	mcg	45	70	150	150
Magnesium	mg	70	200	400	450
Zinc	mg	5	8	15	15
Copper	mg	0.6	1	2	2.0

g = gram
mg = milligram
mcg = microgram
IU = International unit

APPENDIX D

Percentages of U.S. RDA

This chart shows what percentage of the U.S. RDA you need for your age and sex.

Most people do not need 100 percent of the U.S. RDA for every nutrient. Use of 100 percent of the U.S. RDA as a nutritional goal is in no way dangerous. However, it may lead to needless changes in your diet and to spending more money on food than is necessary. It may also cause you unwarranted concern about nutrient shortages in your day's food choices. On the other hand, at certain stages of the life cycle, some people need more than 100 percent of certain nutrients.

For your daily nutrition goal, select the appropriate amounts of nutrients shown in this table. For example, the recommended amount of calcium for a 16-year-old male or female is 120 percent of the U.S. RDA. Therefore daily food choices by 16-year-olds should provide 120 percent or more of the U.S. RDA for calcium, rather than 100 percent.

Age	Food Energy[1]	Protein[2]	Vitamin A	Vitamin C	Thiamin	Ribo-flavin	Niacin[3]	Calcium	Iron
Years	*Calories*	*Percent of U.S. Recommended Daily Allowance*							
Child:									
1–3	1300	35	40	70	50	50	30	80	85
4–6	1800	50	50	70	60	65	35	80	60
7–10	2400	55	70	70	80	75	50	80	60
Male:									
11–14	2800	70	100	75	95	90	55	120	100
15–18	3000	85	100	75	100	110	55	120	100
19–22	3000	85	100	75	100	110	60	80	60
23–50	2700	90	100	75	95	95	45	80	60
51+	2400	90	100	75	80	90	35	80	60
Female:									
11–14	2400	70	80	75	80	80	45	120	100
15–18	2100	75	80	75	75	85	30	120	100
19–22	2100	75	80	75	75	85	35	80	100
23–50	2000	75	80	75	70	75	30	80	100
51+	1800	75	80	75	70	65	25	80	60
Pregnant	+300[4]	+50[4]	100	100	+20[4]	+20[4]	35	120	100+
Nursing	+500[4]	+35[4]	120	135	+20[4]	+30[4]	35	120	100

[1] Calorie needs differ depending on body composition and size, age, and activity of the person.

[2] U.S. RDA of 65 grams is used for this table. In labeling, a U.S. RDA of 45 grams is used for foods providing high-quality protein, such as milk, meat, and eggs.

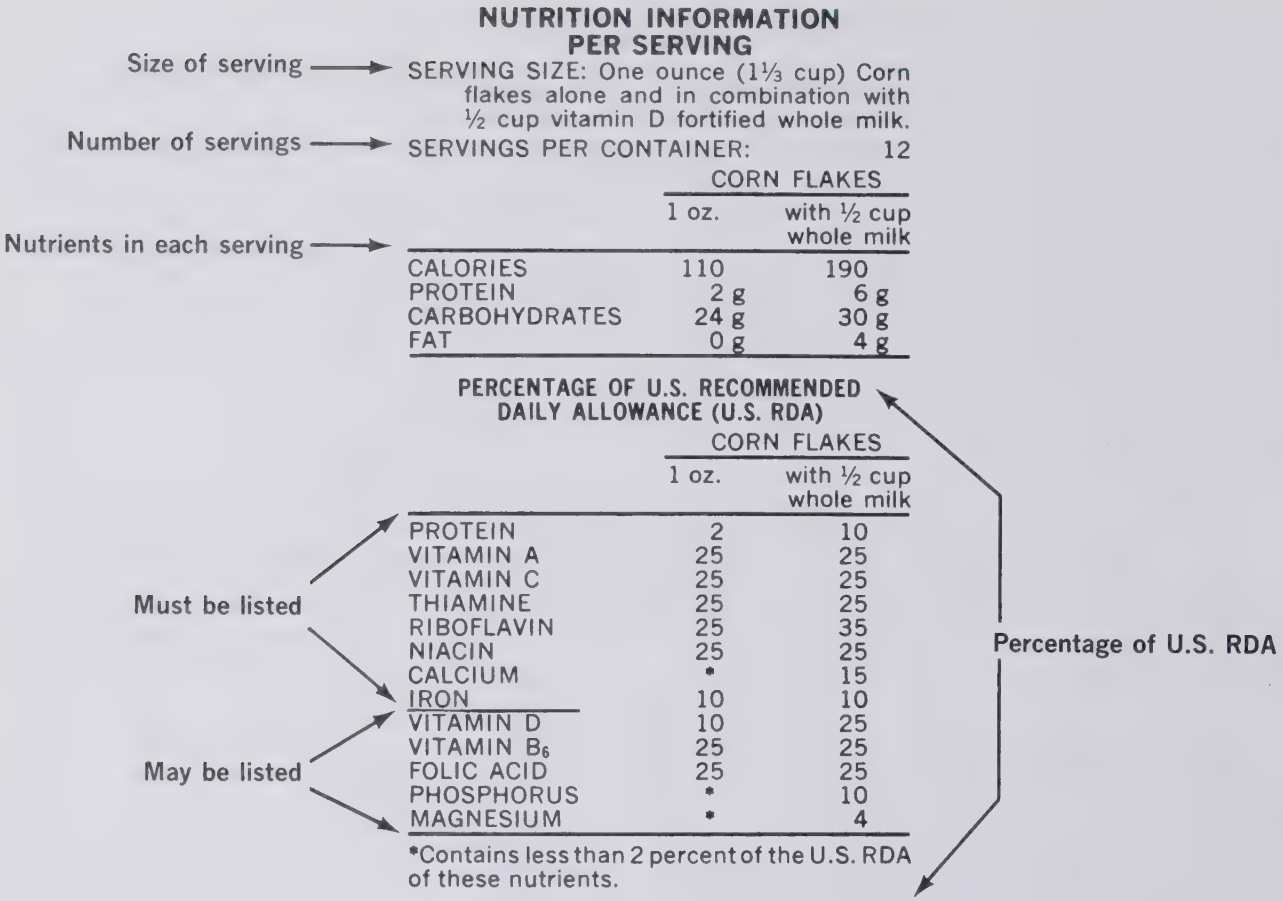
[3] The percentage of the U.S. RDA shown for niacin will provide the RDA for niacin if the RDA for protein is met. Some niacin is derived in the body from tryptophan, an amino acid present in protein.

[4] To be added to the percentage for the girl or woman of the appropriate age.

Source: U.S. Recommended Daily Allowance, "Food Labeling," Federal Register, vol. 38, no. 49, part II, March 14, 1973. Recommended Dietary Allowances, 8th ed. 1974, National Academy of Sciences, National Research Council.

APPENDIX E

Nutrition Label



APPENDIX F

Anatomy of a Food Label



Information that must be listed on a food label.

APPENDIX G

Nutrients in Food

Table 1.—Food energy and percentage of U.S. Recommended Daily Allowance for eight nutrients provided by a specified amount of various foods

Source: USDA Agric. Inf. Btn. No. 382

	Food, Approximate Measure, and Weight (in grams)		Grams	Food Energy	Protein	Vitamin A	Vitamin C	Thiamin	Riboflavin	Niacin	Calcium	Iron
	MILK AND MILK PRODUCTS			Calories	Percentage of U.S. RDA							
	Milk:											
	Fluid:											
1	Whole, 3.5% fat	1 cup	244	160	20	6	4	4	25	*	30	*
2	Nonfat (skim)	1 cup	245	90	20	*	4	6	25	*	30	*
3	Partially skimmed, 2% nonfat milk solids added	1 cup	246	150	25	4	4	6	30	*	35	*
	Canned, concentrated, undiluted:											
4	Evaporated, unsweetened	1 cup	252	350	40	15	4	6	50	2	60	2
5		1 fl oz	32	45	4	2	*	*	6	*	8	*
6	Condensed, sweetened	1 cup	306	980	60	20	4	15	70	4	80	2
7	Dry, nonfat instant, reconstituted (1⅓ cups needed for reconstitution to 1 qt).	1 cup	242	80	20	*[1]	4	6	25	*	30	*
8	Buttermilk, fluid, cultured, made from skim milk	1 cup	245	90	20	*	4	6	25	*	30	*
	Milk beverages:											
	Chocolate drink, fluid, commercial (approx. 90% milk):											
9	Made with whole (3.5% fat) milk	1 cup	250	210	20	6	4	4	25	2	30	2
10	Made with skim milk (2% butterfat added)	1 cup	250	190	20	4	4	6	25	2	25	2
11	Cocoa, hot, homemade with whole milk	1 cup	250	240	20	8	4	6	25	2	30	6
	Malted:											
12	Beverage	1 cup	235	240	25	10	4	10	30	*	30	4
13	Dry powder, approx. 3 heaping teaspoons per oz	1 oz	28	120	10	6	*	6	8	*	8	4
14	Milk, human, U.S. samples	1 cup	246	190	6	10	20	2	6	2	8	*
	Cheese:											
	Natural:											
15	Blue or Roquefort type	1 oz	28	110	15	8	*	*	10	2	8	*
16	Camembert (domestic), packaged in 4-oz pkg with 3 wedges per pkg.	1 wedge	38	110	15	8	*	2	15	2	4	2
	Cheddar (domestic):											
17	Ounce	1 oz	28	110	15	8	*	*	8	*	20	2
18	Shredded	1 cup	113	450	60	30	*	2	30	*	80	6
	Cottage, large or small curd:											
19	Creamed	1 cup (pressed down).	245	260	70	8	*	4	35	*	25	4
20	Uncreamed	1 cup (pressed down).	200	170	80	*	*	4	35	*	20	4
21	Cream, regular and whipped	1 oz	28	110	6	8	*	*	4	*	2	*

22	Limburger	1 oz	28	100	15	6	*	2	8	*	15	2
23	Parmesan, grated	1 oz	28	130	25	8	*	*	15	*	40	*
24		1 tbsp	5	25	4	2	*	*	2	*	6	*
25	Swiss (domestic)	1 oz	28	110	15	6	*	*	6	*	25	2
	Pasteurized process cheese:											
	American:											
26	Diced, not packed	1 cup	140	520	70	35	*	2	35	*	100	8
27	Slice, approx. 3½ x 3⅜ x ⅛ inch	1 oz	28	110	15	6	*	*	8	*	20	2
28	Swiss	1 oz	28	100	15	6	*	*	6	*	25	2
29	Pasteurized process cheese food, American	1 oz	28	90	10	6	*	*	10	*	15	2
30	Pasteurized process cheese spread, American	1 oz	28	80	10	4	*	*	8	*	15	2
	Cream:											
31	Half-and-half (cream and milk)	1 cup	242	320	15	25	4	4	25	*	25	*
32		1 tbsp	15	20	2	2	*	*	2	*	2	*
33	Light, coffee or table	1 cup	240	510	15	40	4	4	20	*	25	*
34		1 tbsp	15	30	*	2	*	*	2	*	2	*
35	Sour	1 cup	230	485	15	40	4	4	20	*	25	*
36		1 tbsp	12	25	*	2	*	*	*	*	*	*
	Whipping, unwhipped (volume about double when whipped):											
37	Light	1 cup	239	720	15	60	4	4	15	*	20	*
38		1 tbsp	15	45	*	4	*	*	2	*	2	*
39	Heavy	1 cup	238	840	10	70	4	4	15	*	20	*
40		1 tbsp	15	60	*	4	*	*	2	*	2	*
	Imitation cream products (made with vegetable fat):											
	Creamers:											
41	Powdered	1 cup	94	505	6	4[2]	*	*	*	*	2	4
42		1 tsp	2	10	*	*	*	*	*	*	*	*
43	Liquid (frozen)	1 cup	245	345	4	2[2]	*	*	*	*	2	*
44		1 tbsp	15	20	*	*	*	*	*	*	*	*
45	Sour dressing (imitation sour cream) made	1 cup	235	440	15	*	2	4	20	*	30	*
46	with nonfat dry milk.	1 tbsp	12	20	*	*	*	*	*	*	2	*
	Whipped topping:											
47	Pressurized	1 cup	70	190	2	6[2]	*	*	*	*	*	*
48		1 tbsp	4	10	*	*	*	*	*	*	*	*
49	Frozen	1 cup	75	230	2	10[2]	*	*	*	*	*	*
50		1 tbsp	4	10	*	*	*	*	*	*	*	*
51	Powdered, made with whole milk	1 cup	75	175	4	6[2]	*	*	*	*	6	*
52		1 tbsp	4	10	*	*	*	*	*	*	*	*
	Desserts (made with milk):											
53	Custard, baked	1 cup	265	310	30	20	*	8	30	2	30	6

*None or less than 1 percent.

See footnotes at end of table.

(Continued on page 506)

APPENDIX G (Continued)

	Food, Approximate Measure, and Weight (in grams)		Grams	Food Energy Calories	Protein	Vitamin A	Vitamin C	Thiamin	Riboflavin	Niacin	Calcium	Iron
	MILK AND MILK PRODUCTS—Continued				Percentage of U.S. RDA							
	Ice cream:											
	Regular (approx. 10% fat):											
54	Hardened	1 cup	133	260	15	10	2	4	15	*	20	*
55	Soft-serve	1 cup	173	330	15	15	4	4	20	*	25	2
56	Rich (approx. 16% fat), hardened	1 cup	148	330	8	20	2	2	10	*	10	*
	Ice milk:											
57	Hardened	1 cup	131	200	15	6	2	4	15	*	20	*
58	Soft-serve	1 cup	175	270	20	8	4	6	25	*	25	2
	Puddings with starch base, prepared from home recipes:											
59	Chocolate	1 cup	260	390	20	8	*	4	20	2	25	8
60	Vanilla	1 cup	255	280	20	8	4	6	25	2	30	*
	Puddings made from mixes:											
61	Made with milk, cooked	1 cup	260	320	20	6	*	4	25	2	25	4
62	Made with milk, without cooking	1 cup	260	330	15	6	*	6	25	2	35	8
63	Rennin desserts, made from mix, with milk	1 cup	250[3]	240	20	8	4	4	25	2	30	*
	Tapioca desserts:											
64	Apple tapioca	1 cup	250	290	2	*	*	*	*	*	*	2
65	Tapioca cream pudding	1 cup	165	220	20	10	4	4	20	*	15	4
	Yogurt (plain):											
66	Made from partially skim milk	1 cup	245	120	20	4	4	6	25	*	30	*
67	Made from whole milk	1 cup	245	150	15	6	4	4	25	*	25	*
	MEAT AND MEAT ALTERNATES											
	Meat:											
68	Bacon (approx. 20 slices per lb raw), broiled or fried crisp.	2 slices	15	90	10	*	*	6	2	4	*	2
69	Bacon, Canadian style, slice, 3⅜ x 3/16 inch raw, broiled or fried, drained.	1 slice	21	60	15	*	*	15	2	4	*	4
	Beef,[4] cooked:											
	Chuck, braised, simmered or pot-roasted:											
70	Piece, lean and fat	3 oz	85	250	50	*	*	2	10	20	*	15
71	Lean only	3 oz	85	160	60	*	*	4	10	20	2	20
72	Chopped or diced, lean and fat	1 cup	140	410	80	*	*	4	15	30	2	25
73	Lean only	1 cup	140	270	90	*	*	6	20	30	2	30
74	Ground, lean only	1 cup	110	210	70	*	*	4	15	25	2	25

	Corned, boneless:										
75	Fresh cooked....3 oz	85	320	45	*	*	2	8	6	*	15
76	Canned, slice, approx. 3 x 2 x ⅜ inch....1 slice	40	90	20	*	*	*	6	6	*	10
77	Flank steak....3 oz	85	170	60	*	*	4	10	20	2	20
	Ground beef, broiled to well-done stage:										
78	Regular....3 oz	85	270	50	*	*	4	10	25	*	15
79	Lean....3 oz	85	190	50	*	*	6	10	25	*	15
	Plate beef, simmered:										
80	Lean and fat....3 oz	85	370	40	2	*	2	8	15	*	15
81	Lean only....3 oz	85	170	60	*	*	2	10	20	2	20
	Roasts, roasted:										
	Rib:										
82	Sliced, lean and fat....3 oz	85	370	40	2	*	2	8	15	*	10
83	Lean only....3 oz	85	210	60	*	*	4	10	20	*	15
	Rump:										
84	Sliced, lean and fat....3 oz	85	300	45	*	*	4	8	20	*	15
85	Lean only....3 oz	85	180	60	*	*	4	10	20	*	15
86	Chopped or diced, lean and fat....1 cup	140	490	70	2	*	6	15	30	2	25
87	Lean only....1 cup	140	290	90	*	*	6	20	35	2	30
88	Ground, lean only....1 cup	110	230	70	*	*	6	15	30	2	25
	Steaks, braised, broiled or sauteed:										
	Round:										
89	Lean and fat....3 oz	85	220	60	*	*	4	10	25	*	15
90	Lean only....3 oz	85	160	60	*	*	4	10	25	2	15
	Steaks, broiled:										
	Club, porterhouse, or T-bone:										
91	Lean and fat....3 oz	85	400	35	2	*	4	8	20	*	10
92	Lean only....3 oz	85	190	60	*	*	4	10	25	*	15
	Sirloin:										
93	Lean and fat....3 oz	85	330	45	*	*	4	8	20	*	15
94	Lean only....3 oz	85	180	60	*	*	6	10	25	2	20
95	Beef, dried or chipped....1 oz	28	60	20	*	*	2	6	6	*	8
	Lamb,[4] cooked:										
	Chops (3 per lb), broiled:										
	Loin:										
96	Lean and fat....3.5 oz	99	360	50	*	*	8	8	15	*	6
97	Lean only....2.3 oz	65	120	40	*	*	6	10	20	*	6
	Rib:										
98	Lean and fat....3.2 oz	92	370	40	*	*	8	15	25	*	8
99	Lean only....2 oz	57	120	35	*	*	6	10	20	*	8

*None or less than 1 percent.
See footnotes at end of table.

(Continued on page 508)

APPENDIX G (Continued)

	Food, Approximate Measure, and Weight (in grams)		Food Energy	Protein	Vitamin A	Vitamin C	Thiamin	Riboflavin	Niacin	Calcium	Iron
	MEAT AND MEAT ALTERNATES—Continued	Grams	Calories	Percentage of U.S. RDA							
	Roasts, roasted:										
	Leg:										
100	Sliced, lean and fat....3 oz	85	240	50	*	*	8	15	25	*	8
101	Lean only....3 oz	85	160	60	*	*	10	15	25	2	10
102	Chopped or diced, lean and fat....1 cup	140	390	80	*	*	15	20	40	2	15
103	Lean only....1 cup	140	260	90	*	*	15	25	45	2	15
	Shoulder:										
104	Sliced, lean and fat....3 oz	85	290	40	*	*	8	10	20	*	6
105	Lean only....3 oz	85	170	50	*	*	8	15	25	*	8
106	Chopped or diced, lean and fat....1 cup	140	470	70	*	*	10	20	35	2	10
107	Lean only....1 cup	140	290	80	*	*	15	25	40	2	15
	Pork,[4] cured, cooked:										
	Ham, light cure, roasted:										
108	Sliced, lean and fat....3 oz	85	250	40	*	*	25	8	15	*	10
109	Lean only....3 oz	85	160	50	*	*	35	10	20	*	15
110	Chopped or diced, lean and fat....1 cup	140	410	70	*	*	45	15	25	2	20
111	Lean only....1 cup	140	260	80	*	*	60	20	30	2	25
112	Ground, lean only....1 cup	110	210	60	*	*	45	15	25	2	20
	Shoulder cuts (Boston butt or picnic), roasted:										
113	Sliced, lean and fat....3 oz	85	280	45	*	*	30	10	20	*	15
114	Lean only....3 oz	85	210	50	*	*	35	10	20	*	15
115	Chopped or diced, lean only....1 cup	140	340	90	*	*	60	20	35	2	30
116	Ground, lean only....1 cup	110	270	70	*	*	45	15	30	2	20
	Pork,[4] fresh, cooked:										
	Ham, roasted:										
117	Sliced, lean and fat....3 oz	85	320	45	*	*	30	10	20	*	15
118	Lean only....3 oz	85	180	60	*	*	35	15	25	2	20
119	Chopped or diced, lean and fat....1 cup	140	520	70	*	*	45	20	30	2	25
120	Lean only....1 cup	140	300	90	*	*	60	25	40	2	30
121	Ground, lean only....1 cup	110	240	70	*	*	45	20	30	2	25
	Loin, baked or roasted:										
122	Sliced, lean and fat....3 oz	85	310	45	*	*	50	15	25	*	15
123	Lean only....3 oz	85	220	60	*	*	60	15	30	2	20
124	Chopped or diced, lean and fat....1 cup	140	510	80	*	*	90	20	40	2	25
125	Lean only....1 cup	140	360	90	*	*	100	25	45	2	30

	Loin chops (3 per lb), broiled:											
126	Lean and fat	2.7 oz	78	310	45	*	*	50	15	25	*	15
127	Lean only	2 oz	56	150	40	*	*	40	10	20	*	10
128	Spareribs, braised, lean and fat	3 oz	85	370	40	*	*	25	10	15	*	10
	Shoulder cuts (Boston butt or picnic), roasted:											
129	Sliced, lean and fat	3 oz	85	300	40	*	*	30	10	20	*	15
130	Lean only	3 oz	85	210	50	*	*	35	15	20	*	15
131	Chopped or diced, lean and fat	1 cup	140	490	70	*	*	45	20	30	2	25
132	Lean only	1 cup	140	340	80	*	*	60	20	35	2	25
133	Ground, lean only	1 cup	110	270	70	*	*	45	20	30	2	20
134	Rabbit, domesticated, stewed	3 oz	85	180	60	*	*	2	4	50	2	8
	Veal, medium fat, cooked:											
	Boneless cuts, braised, pot-roasted or stewed:											
135	Sliced	3 oz	85	200	60	*	*	6	15	25	*	15
136	Chopped or diced	1 cup	140	330	90	*	*	8	25	45	2	25
137	Cutlet, braised or broiled	3 oz	85	180	50	*	*	4	10	25	*	15
	Loin, braised or broiled:											
138	Piece	3 oz	85	200	50	*	*	4	10	25	*	15
139	Chopped or diced	1 cup	140	330	80	*	*	6	20	40	2	25
	Rib, roasted:											
140	Sliced	3 oz	85	230	50	*	*	8	15	35	*	15
141	Chopped or diced	1 cup	140	380	80	*	*	10	25	60	2	25
142	Ground	1 cup	110	300	70	*	*	10	20	45	2	20
	Poultry:											
143	Chicken, canned, meat only, boned	1 cup	205	410	100	10	15	6	15	45	4	15
	Chicken, cooked (from 2½-lb fryer, ready-to-cook):											
144	Flesh only, broiled	3 oz	85	120	45	2	*	2	10	40	*	8
145	Breast, fried, with bone	½ breast	94	160	60	2	*	2	10	60	*	8
146	Drumstick, fried, with bone	1 drumstick	56	90	25	2	*	2	8	15	*	4
147	Thigh, fried, with bone	1 thigh	65	120	35	2	*	2	15	20	*	6
	Chicken, hens or cocks, stewed:											
	Light meat without skin:											
148	Sliced	3 oz	85	150	60	2	*	2	4	45	*	6
149	Chopped or diced	1 cup	140	250	100	4	*	2	8	80	2	10
	Dark meat without skin:											
150	Sliced	3 oz	85	180	60	4	*	4	10	35	2	8
151	Chopped or diced	1 cup	140	290	90	8	*	6	15	60	2	15
	Chicken, roasters, roasted:											
	Light meat without skin:											
152	Sliced	3 oz	85	160	60	2	*	4	4	50	*	6
153	Chopped or diced	1 cup	140	260	100	4	*	8	8	80	2	10

*None or less than 1 percent.

See footnotes at end of table.

(Continued on page 510)

APPENDIX G (Continued)

	Food, Approximate Measure, and Weight (in grams)		Grams	Food Energy	Protein	Vitamin A	Vitamin C	Thiamin	Riboflavin	Niacin	Calcium	Iron
	MEAT AND MEAT ALTERNATES—Continued			Calories	Percentage of U.S. RDA							
	Dark meat without skin:											
154	Sliced	3 oz	85	160	60	2	*	6	10	25	2	8
155	Chopped or diced	1 cup	140	260	90	4	*	10	15	35	2	15
156	Goose, domesticated, roasted	3 oz	85	200	60	8	*	6	8	40	2	8
157	Turkey, canned, boneless	1 cup	205	410	100	6	*	2	15	50	2	15
	Turkey, roasted:											
	Light meat without skin:											
158	Sliced	3 oz	85	150	60	2	*	2	8	45	*	6
159	Chopped or diced	1 cup	140	250	100	2	*	4	10	80	2	10
	Dark meat without skin:											
160	Sliced	3 oz	85	170	60	4	*	2	10	20	2	10
161	Chopped or diced	1 cup	140	280	90	6	*	4	20	30	2	20
	Variety meats:											
	Heart, beef, lean, braised:											
162	Sliced	3 oz	85	160	60	*	2	15	60	35	*	30
163	Chopped or diced	1 cup	145	270	100	*	2	25	100	60	*	50
164	Kidney, beef, braised	3 oz	85	210	60	20	*	30	240	45	2	60
	Liver:											
165	Beef, fried	3 oz	85	200	50	910	40	15	210	70	*	40
166	Calf, fried	3 oz	85	220	60	560	50	15	210	70	2	70
	Chicken, simmered:											
167	Whole, approx. 2 x 2 x ⅝ inch	1 liver	25	40	15	60	6	2	40	15	*	10
168	Chopped	1 cup	140	230	80	340	35	15	220	80	2	70
169	Hog, fried	3 oz	85	210	60	250	30	20	220	100	2	140
170	Roe, herring, canned	3 oz	85	100	40	*	4	6	40	6	2	6
	Sausage, cold cuts, and luncheon meat:											
171	Bologna, slice, 4½ x ⅛ inch	1 oz	28	80	8	*	*	4	4	4	*	2
172	Braunschweiger, slice, 3⅛ x ¼ inch	1 oz	28	90	10	35	*	4	25	10	*	10
173	Deviled ham, canned	1 tbsp	13	45	4	*	*	2	*	*	*	2
174	Frankfurter, heated (8 per lb)	1 frank	56	170	15	*	*	6	6	6	*	4
175	Ham, boiled	1 oz	28	70	10	*	*	8	2	4	*	4
176	Knockwurst, link approx. 4 x 1⅛ inches	1 link	68	190	20	*	*	8	8	8	*	8
177	Polish sausage, link, approx. 5⅜ x 1 inch	1 link	76	230	25	*	*	15	8	10	*	10
	Pork sausage, cooked:											
178	Pattie, approx. 3⅞ x ¼ inch raw, or link, approx. 4 x ⅞ inch raw.	1 pattie or 2 links.	27	130	10	*	*	15	6	4	*	4

179	Salami, dry type	1 oz	28	130	15	*	*	8	4	8	*	6
180	Cooked	1 oz	28	90	10	*	*	4	4	6	*	4
181	Vienna sausage, canned, approx. 2 x ⅞ inch	1 sausage	16	40	4	*	*	*	2	2	*	2
182	Sweetbreads (thymus), beef, braised	3 oz	85	270	50	*	*	4	8	15	*	8
183	Tongue, beef, medium fat, braised	1 oz	28	70	15	*	*	*	4	4	*	4
	Fish and shellfish:											
184	Anchovy, pickled, not heavily salted, flat or rolled, canned.	5 anchovies	20	35	8	*	*	*	2	6	4	4
185	Bass, black sea, baked, stuffed[5]	3 oz	85	220	30	*	*	6	4	8	2	4
186	Bass, striped, oven-fried	3 oz	85	170	40	*	*	6	2	8	2	4
	Bluefish:											
187	Baked or broiled with butter or margarine	3 oz	85	140	50	*	*	6	4	8	2	4
188	Fried[6]	3 oz	85	170	45	2	*	6	6	8	2	4
	Clams:											
189	Canned, drained solids (chopped or minced)	1 cup	160	160	60	4	*	2	10	8	8	35
190	Raw, meat only, 4 cherrystones or 5 little necks.	4 or 5 clams	70	60	15	2	10	4	6	4	4	30
191	Cod, broiled with butter or margarine	3 oz	85	140	60	4	*	4	6	15	2	4
	Crabmeat, including blue, rock, and king:											
192	Canned, drained solids	3 oz	85	90	35	20	*	4	4	8	4	4
193	Cooked, steamed	3 oz	85	80	35	35	4	10	4	10	4	4
194	Fish stick, frozen, breaded, cooked, stick, 4 x 1 x ½ inch.	1 fish stick	28	50	10	*	*	*	2	2	*	*
195	Flounder, baked with butter or margarine	3 oz	85	170	60	*	4	4	4	10	2	6
196	Haddock, pan-fried or over-fried	3 oz	85	140	35	*	4	2	4	15	4	6
197	Halibut, Atlantic and Pacific, broiled with butter or margarine.	3 oz	85	150	50	10	*	2	4	35	2	4
198	Herring, canned, smoked, kippered, fillet, 4⅜ x 1¾ x ¼ inch.	1 fillet	40	80	20	*	*	*	6	6	2	4
199	Lobster, northern, cooked	3 oz	85	80	35	*	*	6	4	6	6	4
200	Mackerel, Atlantic, broiled with butter or margarine	3 oz	85	200	40	8	*	8	15	35	*	6
	Ocean perch, Atlantic (redfish):											
201	Fried[6]	3 oz	85	190	35	*	*	6	6	8	2	6
202	Frozen, breaded, fried, reheated fillet	3.1 oz	88	280	35	*	*	6	6	8	2	6
	Oysters:											
203	Eastern, raw, meat only, approx. 13–19 selects (medium) or 19–31 standards (small).	1 cup	240	160	45	15	120	25	25	30	25	70

*None or less than 1 percent.
See footnotes at end of table.

(Continued on page 512)

APPENDIX G (Continued)

	Food, Approximate Measure, and Weight (in grams)			Food Energy	Protein	Vitamin A	Vitamin C	Thiamin	Riboflavin	Niacin	Calcium	Iron
	MEAT AND MEAT ALTERNATES—Continued		Grams	Calories	Percentage of U.S. RDA							
204	Pacific, raw, meat only, approx. 4–6 medium	1 cup	240	220	60	15	120	20	25	15	20	100
205	Fried, approx. 4 select (medium) oysters[6]	1.6 oz	45	110	8	4	20	6	8	6	6	20
206	Rockfish, oven-steamed	3 oz	85	90	35	10	2	2	6	35	2	4
	Salmon:											
	Canned, drained:											
207	Pink	3 oz	85	100	30	*	*	2	8	30	15[7]	4
208	Sockeye (red)	3 oz	85	120	30	4	*	2	6	25	20[7]	4
209	Steak, broiled or baked with butter or margarine	3 oz	85	160	50	2	*	10	2	40	10	6
210	Smoked	1 oz	28	50	15	*	*	*	4	4	*	2
211	Sardines, Atlantic, canned in oil, drained solids	3 oz	85	170	45	4	*	2	10	25	35	15
212	Scallops, frozen, breaded, reheated (15–20 per lb)	1 scallop	25	50	10	*	*	*	2	*	2	4
213	Shad, baked with butter or margarine and bacon slices.	3 oz	85	170	45	*	*	8	15	35	2	2
	Shrimp:											
214	Canned, meat	3 oz	85	100	45	2	*	*	2	8	10	15
215	French-fried[8]	3 oz	85	190	40	*	*	2	4	10	6	10
216	Swordfish, broiled with butter or margarine	3 oz	85	140	50	35	*	2	2	45	2	6
	Tuna:											
217	Canned in oil, drained solids	3 oz	85	170	60	2	*	2	6	50	*	8
218	Canned in water, solids and liquid	3 oz	85	110	50	*	*	*	6	60	*	8
	Eggs, large (24 ounces per dozen):											
	Raw or cooked in shell or with nothing added:											
219	Whole, without shell	1 egg	50	80	15	10	*	2	8	*	2	6
220	White of egg	1 white	33	18	8	*	*	*	6	*	*	*
221	Yolk of egg	1 yolk	17	60	6	10	*	2	4	*	2	4
222	Fried	1 egg	46	100	15	15	*	4	8	*	2	6
223	Scrambled, with milk and table fat	1 egg	64	110	15	15	*	4	10	*	6	6
	Dry legumes and nuts:											
	Almonds:											
224	In shell	10 nuts	25	60	4	*	*	2	6	2	2	2
225	Shelled, whole	1 cup	142	850	60	*	*	25	80	25	35	35
226	Sliced	1 cup	95	570	40	*	*	15	50	15	20	25
	Beans, dry:											
	Common varieties as Great Northern, navy, and others:											
	Cooked, drained:											
227	Great Northern	1 cup	180	210	30	*	*	15	8	6	8	25
228	Navy (pea)	1 cup	190	220	35	*	*	20	8	6	10	30

229	Lima	1 cup	190	260	35	*	*	15	6	6	6	35
230	Red kidney	1 cup	185	220	30	*	*	15	6	6	6	25
	Canned, solids and liquid:											
231	Red kidney	1 cup	255	230	30	*	*	8	6	8	8	25
232	White	1 cup	255	310	35	4	8	10	6	8	15	30
233	Brazilnuts, shelled (approx. 32 large kernels)	1 cup	140	920	45	*	*	90	10	10	25	25
234	Cashew nuts, roasted in oil, whole kernels	1 cup	140	790	60	2	*	40	20	15	6	30
235	Chestnuts, fresh, shelled	1 cup	160	310	10	*	*	25	20	4	4	15
	Coconut, fresh, meat only:											
236	Piece, approx. 2 x 2 x ½ inch	1 piece	45	160	4	*	2	2	*	*	*	4
237	Shredded or grated, firmly packed	1 cup	130	450	10	*	6	4	2	4	2	10
	Coconut, dried:											
238	Unsweetened	1 oz	28	190	4	*	*	2	*	*	*	4
239	Cowpeas, including blackeye peas, dry, cooked, drained.	1 cup	250	190	30	*	*	25	6	4	4	20
240	Filberts (hazelnuts), shelled, whole kernels	1 cup	135	860	40	*	*	40	*	6	30	25
241	Lentils, whole, dry, cooked	1 cup	200	210	35	*	*	10	8	6	4	25
	Peanuts, roasted:											
242	Whole, in shell	10 jumbo nuts.	27	110	10	*	*	4	2	15	2	2
243	Salted, whole or halves	1 cup	144	840	80	*	*	30	10	120	10	15
244	Peanut butter	1 tbsp	16	90	8	*	*	2	2	10	*	2
245	Peas, split, dry, cooked	1 cup	200	230	35	2	*	20	10	8	2	20
246	Pecans, halves	1 cup	108	740	20	2	4	60	8	4	8	15
247	Pumpkin and squashseed kernels, dry, hulled	1 cup	140	770	90	2	*	25	15	15	8	90
248	Soybeans, dry, cooked	1 cup	180	230	45	2	*	25	10	6	15	25
249	Sunflower seed kernels, dry, hulled	1 cup	145	810	80	2	*	190	20	40	15	60
	Walnuts:											
250	Black, chopped or broken kernels	1 cup	125	790	60	8	*	20	8	4	*	40
	Persian or English:											
251	Halves (approx. 50)	1 cup	100	650	35	*	4	20	8	4	10	15
252	Chopped pieces or chips	1 cup	120	780	40	*	4	25	10	6	10	20
	Main dish mixtures:											
253	Beef, dried, chipped, creamed	1 cup	245	380	45	20	*	10	30	8	25	10
254	Cheese souffle, from home recipe (collapsed)	1 cup	95	210	20	15	*	4	15	*	20	4
255	Clam fritter,[9] 2 x 1¾ inches	1 fritter	40	120	10	*	*	*	2	2	2	8
256	Crab, deviled[10]	1 cup	240	450	60	50	25	15	15	20	10	15
257	Crab imperial[11]	1 cup	220	320	70	50	20	8	15	10	15	10
258	Ham croquette, pan-fried; 1-inch diameter, 3 inches long.	1 croquette	65	160	25	4	*	10	8	8	4	8
259	Lobster Newburg[12]	1 cup	250	490	100	*	*	10	15	20	20	12

*None or less than 1 percent.

See footnotes at end of table.

(Continued on page 514)

APPENDIX G (Continued)

	Food, Approximate Measure, and Weight (in grams)		Grams	Food Energy	Protein	Vitamin A	Vitamin C	Thiamin	Riboflavin	Niacin	Calcium	Iron
	MEAT AND MEAT ALTERNATES—Continued			Calories	Percentage of U.S. RDA							
	Macaroni (enriched) and cheese:											
260	Baked from home recipe	1 cup	200	430	35	15	*	15	25	8	35	10
261	Canned	1 cup	240	230	20	6	*	8	15	4	20	6
262	Salmon-rice loaf,[13] slice, 3¾ x 2½ x 1½ inches	1 slice	174	210	45	2	*	10	6	25	10	8
263	Welsh rarebit	1 cup	232	420	40	25	*	6	30	*	60	4
	Salads:											
264	Lobster salad[14]	1 salad	260	290	60	*	80	15	10	20	10	15
265	Tuna salad[15]	1 cup	205	350	70	10	4	6	15	50	4	15
	Stews and other combinations:											
	Beans, canned, solids and liquid:											
	White with:											
266	Frankfurters (sliced)	1 cup	255	370	45	6	*	10	8	15	10	25
267	Pork and tomato sauce	1 cup	255	310	35	6	8	15	4	8	15	25
268	Pork and sweet sauce	1 cup	255	380	35	6	8	10	6	6	15	35
	Beef and vegetable stew:											
269	Home recipe (with lean beef chuck)	1 cup	245	220	35	50	30	10	10	25	2	15
270	Canned	1 cup	245	190	30	50	10	4	8	10	2	10
271	Beef potpie, home-prepared from enriched flour,[16] baked; piece, ⅓ of 9-inch pie.	1 piece	210	520	45	35	10	20	15	30	2	30
272	Corned beef hash (canned with potato)	1 cup	220	400	45	*	*	2	10	25	2	25
273	Chicken a la king, cooked, from home recipe	1 cup	245	470	60	25	20	6	25	25	15	15
274	Chicken fricassee, cooked, from home recipe	1 cup	240	390	80	4	*	4	10	30	2	10
275	Chicken potpie, home-prepared from enriched flour,[16] baked; piece, ⅓ of 9-inch pie.	1 piece	232	550	50	60	8	20	20	25	6	25
276	Chicken and noodles, cooked, from home recipe	1 cup	240	370	50	8	*	4	10	20	2	10
277	Chile con carne, with beans, canned	1 cup	255	340	40	4	*	6	10	15	8	25
278	Chop suey with beef and pork (without noodles), cooked, from home recipe.	1 cup	250	300	60	10	60	20	20	25	6	25
	Chow mein, chicken (without noodles):											
279	Cooked from home recipe	1 cup	250	260	70	6	15	4	15	20	6	15
280	Canned	1 cup	250	100	15	2	20	4	6	4	4	8
281	Fish loaf,[17] slice, 4⅛ x 2½ x 1 inch	1 slice	150	190	45	*	*	6	60	15	2	4
282	Peppers, immature, green, stuffed with beef and crumbs (pepper, 2¾ x 2½ inches with 1⅛ cups of stuffing).	1 pepper	185	310	60	10	120	10	20	25	8	20
	Pizza:											
	From home recipe,[18] baked (in 14-inch-diam. pan); sector, ⅛ of pizza:											

283	With cheese topping	1 sector	65	150	15	8	8	2	8	4	15	4
284	With sausage topping (no cheese)	1 sector	67	160	10	8	10	4	4	4	2	4
285	Chilled, with cheese, commercial, baked; sector, ⅛ of 12-inch-diam. pizza.	1 sector	60	150	10	4	6	2	6	4	8	2
286	Frozen, with cheese, commercial, baked; sector, ⅐ of 10-inch-diam. pizza.	1 sector	57	140	10	6	4	2	6	4	8	2
287	Potatoes au gratin	1 cup	245	360	30	15	40	10	15	10	30	6
	Spaghetti (enriched) in tomato sauce with cheese:											
288	From home recipe	1 cup	250	260	20	20	20	15	10	10	8	10
289	Canned	1 cup	250	190	10	20	15	25	15	25	4	15
	Spaghetti (enriched) in tomato sauce with meatballs:											
290	From home recipe	1 cup	250	330	40	30	35	15	20	20	10	20
291	Canned	1 cup	250	260	25	20	8	10	10	10	6	20
292	Turkey potpie, home-prepared from enriched flour,[16] baked; piece, ⅓ of 9-inch pie.	1 piece	232	550	60	60	8	20	20	40	6	25
	VEGETABLES AND FRUIT											
	Vegetables:											
	Asparagus, green:											
	Cooked, drained:											
293	Spears, ½-inch diam. at base	4 spears	60	10	2	10	25	6	6	4	2	2
294	Pieces, 1½ to 2 inches long	1 cup	145	30	4	25	60	15	15	10	2	4
	Canned, drained:											
295	Spears, ½-inch diam. at base	4 spears	80	18	2	15	20	4	4	4	2	8
296	Pieces	1 cup	235	50	8	40	60	10	15	10	4	25
	Beans:											
	Lima, immature seeds:											
297	Cooked, drained	1 cup	170	190	20	10	50	20	10	10	8	25
	Frozen, cooked, drained:											
298	Baby limas	1 cup	180	210	20	8	35	10	6	10	6	25
299	Fordhook	1 cup	170	170	15	8	50	8	4	8	4	15
300	Canned, drained	1 cup	170	160	15	6	15	4	4	4	4	25
	Snap:											
	Green:											
301	Cooked, drained	1 cup	125	30	4	15	25	6	6	4	6	4
302	Canned, drained	1 cup	135	30	2	15	8	2	4	2	6	10
	Yellow or wax:											
303	Cooked, drained	1 cup	125	30	2	6	25	6	6	4	6	4
304	Canned, drained	1 cup	135	30	2	2	10	2	4	2	6	10
	Bean sprouts (sprouted mung seeds):											
305	Raw	1 cup	105	35	6	*	35	10	8	4	2	8

*None or less than 1 percent.

See footnotes at end of table.

(Continued on page 516)

APPENDIX G (Continued)

	Food, Approximate Measure, and Weight (in grams)		Food Energy	Protein	Vitamin A	Vitamin C	Thiamin	Riboflavin	Niacin	Calcium	Iron
	VEGETABLES AND FRUIT—Continued	Grams	Calories	Percentage of U.S. RDA							
306	Cooked, drained	1 cup	125	35	6	*	15	8	8	4	2	6
	Beets:											
	Cooked, drained, peeled:											
307	Whole beets, 2-inch diameter	2 beets	100	30	2	*	10	2	2	2	2	2
308	Diced or sliced	1 cup	170	60	2	*	15	4	4	2	2	4
	Canned, drained:											
309	Whole beets, small	1 cup	160	60	2	*	8	2	2	*	2	6
310	Diced or sliced	1 cup	170	60	2	*	8	2	2	*	4	6
311	Beet greens, leaves and stems, cooked, drained	1 cup	145	25	4	150	35	6	15	2	15	15
	Broccoli, cooked, drained:											
312	Whole stalks, medium size	1 stalk	180	45	8	90	270	10	20	6	15	8
313	Stalks cut into ½-inch pieces	1 cup	155	40	8	80	230	10	20	6	15	6
314	Chopped, frozen	1 cup	185	50	8	100	180	8	15	4	10	8
315	Brussels sprouts, 7–8 sprouts (1¼- to 1½-inch diam.) per cup, cooked, drained.	1 cup	155	60	10	15	230	8	15	6	4	10
	Cabbage:											
	Common varieties:											
	Raw:											
316	Coarsely shredded or sliced	1 cup	70	18	2	2	60	2	2	*	4	2
317	Finely shredded or sliced	1 cup	90	22	2	2	70	2	2	2	4	2
318	Cooked, drained	1 cup	145	30	2	4	80	4	4	2	6	2
319	Red, raw, coarsely shredded or sliced	1 cup	70	22	2	*	70	4	2	2	2	4
320	Savoy, raw, coarsely shredded or sliced	1 cup	70	18	2	2	60	2	4	*	4	4
321	Cabbage, celery or Chinese, raw, coarsely shredded.	1 cup	75	10	2	2	30	2	2	2	4	2
322	Cabbage, spoon (or pakchoy), cooked, drained	1 cup	170	25	4	110	40	4	8	6	25	6
	Carrots:											
	Raw:											
323	Grated or shredded	1 cup	110	45	2	240	15	4	2	4	4	4
324	Strips, ¼- to ⅜-inch wide, 2½- to 3-inches long.	6–8 strips or 1 oz.	28	10	*	60	4	2	*	*	2	2
325	Cooked, sliced, drained	1 cup	155	50	2	330	15	6	4	4	6	4
326	Canned, sliced, drained	1 cup	155	45	2	470	4	2	2	4	4	6
	Cauliflower:											
327	Raw, sliced flowerbuds	1 cup	85	25	4	2	110	6	4	4	2	4
328	Cooked, drained flowerbuds	1 cup	125	30	4	2	120	8	6	4	2	4
	Celery, green (Pascal type):											
	Raw:											

329	Stalk, large outer, 8 inches long by about 1½ inches at root end.	1 stalk	40	8	*	2	6	*	*	*	2	*
330	Chopped or diced pieces	1 cup	120	20	2	6	20	2	2	2	4	2
331	Cooked, diced pieces, drained	1 cup	150	22	2	6	15	2	2	2	4	2
332	Chard, Swiss, leaves, cooked, drained	1 cup	175	30	4	190	45	4	10	4	15	15
333	Collards, cooked, drained	1 cup	190	60	10	300	240	15	20	10	35	8
	Corn, sweet (white or yellow):											
334	Cooked, ear, 5 x 1¾ inches[19]	1 ear	140	70	4	6[20]	10	6	4	6	*	2
335	Cooked kernels (cut off cob before cooking), drained.	1 cup	165	140	8	15[20]	20	10	10	10	*	6
	Canned:											
336	Cream style, solids and liquid	1 cup	256	210	8	15[20]	20	6	8	15	*	8
337	Whole kernel, drained	1 cup	165	130	6	10[20]	10	4	4	8	*	4
	Cowpeas, immature seeds, including blackeye peas:											
338	Cooked, drained	1 cup	165	180	20	10	45	35	10	10	4	20
339	Canned, solids and liquid	1 cup	255	180	20	4	15	15	8	6	4	20
340	Cress, garden, cooked, drained	1 cup	135	30	4	210	80	6	15	6	8	6
	Cucumbers, raw:											
341	Pared, sliced, ⅛ inch thick	1 cup	140	20	2	*	25	2	4	2	2	2
342	Not pared, sliced, ⅛ inch thick	1 cup	105	16	2	6	20	2	2	*	2	6
343	Dandelion greens, cooked, drained (greens not pressed down; approx. ½ cup, greens pressed down).	1 cup	105	35	4	250	30	10	10	*	15	10
344	Eggplant, diced, cooked, drained	1 cup	200	40	4	*	10	6	4	4	2	6
345	Endive, curly (including escarole), raw, cut or broken into small pieces.	1 cup	50	10	2	35	8	2	4	2	4	4
346	Kale, leaves without stems, cooked, drained	1 cup	110	45	8	180	170	8	10	8	20	10
	Lettuce, raw:											
347	Butterhead, as Boston types and Bibb, 5-inch diameter head.	1 large, 2 medium or 3 small leaves.	15	2	*	2	2	*	*	*	*	2
	Crisphead varieties, as Iceberg (4¾-inch diameter head):											
348	Chopped or shredded pieces	1 cup	55	8	*	4	4	2	2	*	2	2
349	Chunks, small	1 cup	75	10	2	4	8	2	2	*	2	2
350	Wedge, approx. ¼ head	1 wedge	135	18	2	8	15	6	4	2	2	4
351	Portion of leaf, 5 x 4½ inches	1 piece	20	4	*	2	2	*	*	*	*	*
352	Looseleaf, or bunching varieties, chopped or shredded pieces.	1 cup	55	10	2	20	15	2	2	*	4	4
	Mushrooms:											
353	Raw, slices, chopped or diced pieces	1 cup	70	20	2	*	4	4	20	15	*	4
354	Canned, solids and liquid	1 cup	244	40	8	*	6	2	35	25	2	6

*None or less than 1 percent.

See footnotes at end of table.

(Continued on page 518)

APPENDIX G (Continued)

	Food, Approximate Measure, and Weight (in grams)		Grams	Food Energy	Protein	Vitamin A	Vitamin C	Thiamin	Riboflavin	Niacin	Calcium	Iron
	VEGETABLES AND FRUIT—Continued			Calories	Percentage of U.S. RDA							
	Mustard greens, cooked, drained:											
355	Fresh	1 cup	140	30	4	160	110	8	10	4	20	15
356	Frozen, chopped	1 cup	150	30	6	180	50	4	8	4	15	15
357	Okra, crosscut slices, cooked, drained	1 cup	160	45	4	15	60	15	15	6	15	4
	Onions:											
	Mature, dry:											
	Raw:											
358	Sliced	1 cup	115	45	2	*	20	2	2	*	4	4
359	Chopped	1 tbsp	10	4	*	*	2	*	*	*	*	*
360	Cooked, drained, whole or sliced	1 cup	210	60	4	2	25	4	4	2	4	4
361	Young green, raw, bulb and white portion of top	2 medium or 6 small onions.	30	14	*	*	10	*	*	*	2	2
362	Parsley, raw, chopped	1 tbsp	4	2	*	6	10	*	*	*	*	2
363	Parsnips, cooked, drained, diced or 2-inch pieces	1 cup	155	100	4	*	25	8	8	*	6	4
	Peas, green:											
364	Cooked, drained	1 cup	160	110	15	15	60	30	10	20	4	15
365	Canned, drained	1 cup	170	150	10	25	25	10	6	6	4	20
	Peppers, sweet:											
	Immature, green:											
366	Raw (about 5 per lb)	1 pod	90	16	2	6	160	4	4	2	*	2
367	Cooked, sliced, drained	1 cup	135	25	2	10	220	6	6	4	2	4
	Mature, red:											
368	Raw (about 5 per lb)	1 pod	90	25	2	70	250	4	4	2	*	2
	Potatoes:											
369	Baked in skin, long type, 4¾ x 2⅓ inches	1 potato	202	150	6	*	50	10	4	15	2	6
370	Boiled in skin, medium, round type, 2½-inch diameter.	1 potato	150	100	4	*	35	8	2	10	*	4
371	Boiled, pared before cooking, medium, round type, 2½-inch diameter.	1 potato	112	70	4	*	30	6	2	6	*	4
	Boiled, sliced or diced:											
372	Cooked in skin, peeled	1 cup	155	120	6	*	40	10	4	10	2	4
373	Pared before cooking	1 cup	155	100	4	*	40	10	2	10	*	4

	French-fried, pieces 2–3½ inches long:											
374	Cooked in deep fat	10 pieces	50	140	4	*	20	4	2	8	*	4
375	Frozen, oven-heated	10 pieces	50	110	2	*	20	4	*	6	*	4
376	Potato chips (smooth or corrugated surfaces), medium, 2-inch diameter.	10 chips	20	110	2	*	4	2	*	4	*	2
377	Potato sticks	1 cup	35	190	4	*	25	4	2	8	2	4
378	Pumpkin, canned	1 cup	245	80	4	310	20	4	8	8	6	6
379	Radishes, raw, red, medium, without tops	10 radishes	50	10	*	*	20	2	2	*	2	2
380	Rutabagas, cooked, drained, cubed or sliced	1 cup	170	60	2	20	70	6	6	6	10	2
381	Sauerkraut, canned, solids and liquid	1 cup	235	40	4	2	60	4	6	2	8	6
	Soybeans, sprouted seeds:											
382	Raw	1 cup	105	50	10	2	25	15	10	4	4	6
383	Cooked, drained	1 cup	125	50	10	2	8	15	10	4	6	4
	Spinach:											
384	Raw, chopped	1 cup	55	14	2	90	45	4	6	2	6	10
385	Cooked, drained	1 cup	180	40	8	290	80	8	15	4	15	20
386	Canned, drained	1 cup	205	50	8	330	50	2	15	4	25	30
	Squash:											
387	Summer, all varieties, cooked and drained, cubed or diced.	1 cup	210	30	2	15	35	6	10	8	6	4
388	Winter, all varieties, baked, mashed	1 cup	205	130	6	170[21]	45	6	15	6	6	8
	Sweetpotatoes:											
	Cooked, medium, 5 x 2 inches:											
389	Baked in skin	1 potato	146	160	4	180	40	6	4	4	4	6
390	Boiled in skin	1 potato	180	170	4	240	45	10	6	4	4	6
	Canned, vacuum or solid pack:											
391	Pieces	1 cup	200	220	6	310	45	6	4	6	4	8
392	Mashed	1 cup	255	280	8	400	60	8	6	8	6	10
393	Dehydrated flakes, prepared with water	1 cup	255	240	4	610	45	4	4	4	4	8
	Tomatoes:											
394	Raw, including skin, approx. 3-inch diameter, 2⅛ inches high, 7 oz.[19]	1 tomato	200	40	4	35	70	8	4	6	2	4
395	Cooked	1 cup	241	60	4	50	100	10	8	10	4	8
396	Canned, solids and liquid	1 cup	241	50	4	45	70	8	4	8	2	6
397	Tomato paste, canned	1 cup	262	220	15	170	210	35	20	40	8	50
398	Turnips, cooked, cubed, drained	1 cup	155	35	2	*	60	4	4	2	6	4
	Turnip greens:											
399	Cooked, drained	1 cup	145	30	4	180	170	15	20	4	25	8
400	Canned, solids and liquid	1 cup	232	40	6	220	70	4	10	6	25	20
	Watercress, raw:											
401	Whole	Approx. 10 sprigs.	35	8	2	35	45	2	4	2	6	4

*None or less than 1 percent.

See footnotes at end of table.

(Continued on page 520)

APPENDIX G (Continued)

	Food, Approximate Measure, and Weight (in grams)		Food Energy	Protein	Vitamin A	Vitamin C	Thiamin	Riboflavin	Niacin	Calcium	Iron
	VEGETABLES AND FRUIT—Continued	Grams	Calories	Percentage of U.S. RDA							
402	Chopped, finely ..... 1 cup	125	25	4	120	170	6	10	6	20	10
	Vegetable mixtures:										
403	Corn fritters, 2 x 1½ inches ..... 1 fritter	35	130	4	2[22]	2	4	4	4	2	4
404	Corn pudding ..... 1 cup	245	260	15	15[23]	8	4	20	4	15	6
405	Peas and carrots, frozen, cooked, drained ..... 1 cup	160	90	8	300	20	20	6	10	4	10
	Potatoes:										
406	Mashed, milk and butter added ..... 1 cup	210	200	6	8	30	10	6	10	4	4
	Dehydrated mashed:										
407	Flakes, without milk, prepared with water, milk and butter. 1 cup	210	200	6	6	15	6	4	10	6	4
408	Granules with milk, prepared with water and butter. 1 cup	210	170	6	4	10	4	6	8	6	8
409	Scalloped ..... 1 cup	245	260	10	8	45	10	15	10	15	6
410	Succotash (corn and lima beans), frozen, cooked and drained. 1 cup	170	160	10	10	15	10	4	10	2	10
411	Sweetpotatoes, candied, pared before cooking; piece, 1¼ x 2 inches. 1 piece	85	140	2	110	15	4	2	2	4	4
412	Vegetables, mixed (carrots, corn, peas, green snap beans, lima beans), frozen, cooked, drained. 1 cup	182	120	8	180	25	15	8	10	4	15
	Vegetable juices:										
413	Sauerkraut juice, canned ..... 1 cup	242	25	2	2	70	4	6	2	8	15
414	Tomato juice, canned or bottled ..... 1 cup	243	45	4	40	70	8	4	10	2	10
415	Vegetable juice cocktail, canned ..... 1 cup	242	40	4	35	35	8	4	10	2	6
	Vegetable salads:										
	Coleslaw, made with:										
416	French dressing (homemade) ..... 1 cup	120	160	2	2	60	4	2	2	4	2
417	French dressing (commercial) ..... 1 cup	120	110	2	2	60	4	2	2	4	2
418	Mayonnaise ..... 1 cup	120	170	2	4	60	4	4	2	6	2
419	Salad dressing (mayonnaise type) ..... 1 cup	120	120	2	4	60	4	4	2	6	2
	Potato salad, from home recipe, made with:										
420	Cooked salad dressing, seasonings ..... 1 cup	250	250	10	6	45	15	10	15	8	8
421	Mayonnaise and French dressing, hard-cooked eggs and seasonings. 1 cup	250	360	10	8	45	10	8	10	4	10
	Fruit:										
	Apples:										
422	Raw, including skin (about 3 per lb)[19] ..... 1 apple	150	80	*	2	10	2	2	*	*	2

423	Dried, cooked, unsweetened	1 cup	255	200	2	*	*	2	4	2	2	8
	Applesauce, canned:											
424	Sweetened	1 cup	255	230	*	2	4[24]	4	2	*	*	8
425	Unsweetened	1 cup	244	100	*	2	4[24]	4	2	*	*	6
	Apricots:											
426	Raw, including skin (about 12 per lb)[19]	3 apricots	114	60	2	60	20	2	2	4	2	2
	Canned, fruit and liquid:											
427	Sirup pack, heavy	1 cup	258	220	2	90	15	4	2	4	2	4
428	Water pack	1 cup	246	90	2	90	15	4	2	4	2	4
	Dried:											
429	Uncooked	10 medium halves.	35	90	2	80	6	*	4	6	2	10
430	Cooked, unsweetened, fruit and liquid	1 cup	250	210	6	150	15	*	8	15	6	25
	Avocados, raw:											
	California:											
431	Halved fruit, served with skin	½ avocado	120	190	4	6	25	8	15	8	2	4
432	Cubes (½ inch)	1 cup	150	260	6	8	35	10	20	10	2	4
	Florida:											
433	Halved fruit, served with skin	½ avocado	180	200	4	8	35	10	20	10	2	4
434	Cubes (½ inch)	1 cup	150	190	2	8	35	10	20	10	2	4
	Bananas, raw:											
435	Medium, 8¾ inches long[19]	1 banana	175	100	2	4	20	4	4	4	*	4
436	Sliced	1 cup	150	130	2	6	25	4	6	4	2	6
437	Banana flakes	1 cup	100	340	6	15	10	10	15	15	4	15
	Blackberries:											
438	Raw	1 cup	144	80	2	6	50	2	4	4	4	8
	Canned, fruit and liquid:											
439	Sirup pack, heavy	1 cup	256	230	4	6	30	2	2	2	6	8
440	Water pack	1 cup	244	100	4	6	30	4	2	2	6	8
	Blueberries:											
441	Raw	1 cup	145	90	2	2	35	2	6	4	2	8
	Frozen:											
442	Sweetened	1 cup	230	240	2	2	30	6	6	4	2	4
443	Unsweetened	1 cup	165	90	2	2	20	4	6	4	2	8
444	Boysenberries, canned, water pack, fruit and liquid.	1 cup	244	90	2	6	30	2	15	8	4	15
445	Cantaloupe, raw, 5-inch diameter, served with rind	½ melon	477	80	2	180[25]	150	8	4	8	4	6
446	Casaba melon, raw, wedge, 7¾ inches long, 2 inches wide at center, served with rind.	1 wedge	245	40	2	*	30	4	2	4	2	4
	Cherries:											
	Raw:											

*None or less than 1 percent.

See footnotes at end of table.

(Continued on page 522)

APPENDIX G (Continued)

	Food, Approximate Measure, and Weight (in grams)		Grams	Food Energy	Protein	Vitamin A	Vitamin C	Thiamin	Riboflavin	Niacin	Calcium	Iron
	VEGETABLES AND FRUIT—Continued			Calories	Percentage of U.S. RDA							
447	Sour, red, without pits and stems	1 cup	155	90	2	30	25	6	6	4	4	4
448	Sweet, whole	10 cherries	75	45	2	2	10	2	2	2	2	2
449	Without pits and stems	1 cup	145	100	2	4	25	4	6	4	4	4
	Canned, fruit and liquid:											
450	Sour, red, pitted, water pack	1 cup	244	110	4	35	20	4	2	2	4	4
451	Sweet, pitted, sirup pack, heavy	1 cup	257	210	4	4	15	4	2	2	4	4
452	Unpitted, water pack	1 cup	270	120	4	2	10	4	2	2	4	4
453	Cranberries, raw	1 cup	95	45	*	*	15	2	2	*	2	2
454	Dates, pitted, chopped	1 cup	178	490	6	2	*	10	10	20	10	30
	Figs, canned, fruit and liquid:											
455	Sirup pack, heavy	1 cup	259	220	2	2	4	6	4	2	4	6
456	Water pack	1 cup	248	120	2	2	4	4	4	2	4	6
457	Fruit cocktail, canned in heavy sirup, fruit and liquid.	1 cup	255	190	2	8	8	4	2	4	2	6
	Fruit salad, canned, fruit and liquid:											
458	Sirup pack, heavy	1 cup	255	190	2	25	8	2	4	8	2	4
459	Water pack	1 cup	245	90	2	25	10	2	4	8	2	4
	Grapefruit (seedless):											
	Raw, medium, 3¾-inch diameter:[19]											
460	Pink or red, served with peel	½ grapefruit.	241	50	*	10	70	4	2	*	2	2
461	White, served with peel	½ grapefruit.	241	45	*	*	70	4	2	*	2	2
	Raw sections with 2 tbsp of juice per cup:											
462	Pink or red	1 cup	230	90	2	20	140	6	2	2	4	4
463	White	1 cup	230	90	2	*	140	6	2	2	4	4
	Canned sections, fruit and liquid:											
464	Sirup pack	1 cup	254	180	2	*	130	6	2	2	4	4
465	Water pack	1 cup	244	70	2	*	120	4	2	2	4	4
	Grapes:											
	Raw:											
466	American type, slip skin[19]	1 cup	153	70	2	2	6	4	2	2	2	2
467	European type, adherent skin[19]	1 cup	160	110	2	4	10	6	2	2	2	4
	Canned, Thompson seedless, fruit and liquid:											
468	Sirup pack, heavy	1 cup	256	200	2	4	8	6	2	2	2	4
469	Water pack	1 cup	245	130	2	4	8	6	2	2	2	4

470	Honeydew melon, raw, wedge, 7 inches long, 2 inches wide at center, served with rind.	1 wedge	226	50	2	2	60	4	2	4	2	4
471	Kumquats, raw, including skin, medium size[19]	1 kumquat	20	12	*	2	10	*	2	*	2	*
472	Lemons, raw, 2⅛-inch diameter,[19] size 165; juice only.	1 lemon	110	20	2	*	70	2	*	*	2	2
473	Loganberries, raw	1 cup	144	90	2	6	60	2	4	4	4	10
474	Mangos, raw, whole fruit[19]	1 mango	300	130	2	190	120	6	6	10	2	4
475	Melon balls (cantaloupe or honeydew), frozen in sirup.	1 cup	230	140	2	70	60	4	2	6	2	4
476	Nectarines, raw, including skin, 2½-inch diameter[19]	1 nectarine.	150	90	2	45	30	2	4	6	*	4
	Oranges, raw, all commercial varieties:											
477	Whole fruit, 2⅝-inch diameter[19]	1 orange	180	60	2	6	110	8	2	2	6	2
478	Sections without membranes	1 cup	180	90	2	8	150	10	4	4	8	4
479	Papayas, raw, cubed, ½-inch pieces	1 cup	140	55	2	50	130	4	4	2	2	2
	Peaches:											
	Raw:											
480	Whole, 2½-inch diameter, about 4 per lb[19]	1 peach	115	40	*	25[26]	10	2	2	4	*	2
481	Sliced	1 cup	170	70	2	45[26]	20	2	4	8	2	4
	Canned, yellow fleshed, fruit and liquid:											
482	Sirup pack, heavy, halves or slices	1 cup	256	200	2	20	15	2	2	8	*	4
483	Water pack	1 cup	244	80	2	20	10	2	4	8	*	4
	Dried:											
484	Uncooked	1 cup	160	420	8	120	50	2	20	45	8	60
485	Cooked, unsweetened, fruit and liquid	1 cup	250	210	4	60	8	*	8	20	4	25
486	Frozen, sliced, sweetened	1 cup	250	220	2	35	170[27]	2	6	8	*	8
	Pears:											
	Raw, including skin:											
487	Whole, 3½ x 2½ inches[19]	1 pear	180	100	2	*	10	2	4	*	2	2
488	Sliced or cubed	1 cup	165	100	2	*	10	2	4	*	2	2
	Canned, fruit and liquid:											
489	Sirup pack, heavy, halves or slices	1 cup	255	190	*	*	4	2	2	2	2	2
490	Water pack	1 cup	244	80	*	*	4	2	2	*	2	2
	Dried:											
491	Uncooked	1 cup	180	480	8	2	20	2	20	6	6	15
492	Cooked, unsweetened, fruit and liquid	1 cup	255	320	6	2	8	*	10	4	4	8
	Pineapple:											
493	Raw, diced	1 cup	155	80	*	2	45	10	2	2	2	4
	Canned, fruit and liquid:											
	Heavy sirup pack:											
494	Chunk, tidbits, crushed	1 cup	255	190	2	2	30	15	2	2	2	4

*None or less than 1 percent.

See footnotes at end of table.

(Continued on page 524)

APPENDIX G (Continued)

	Food, Approximate Measure, and Weight (in grams)		Food Energy	Protein	Vitamin A	Vitamin C	Thiamin	Riboflavin	Niacin	Calcium	Iron
	VEGETABLES AND FRUIT—Continued	Grams	Calories	Percentage of U.S. RDA							
495	Medium slice	1 slice 1¼ tbsp liquid.	58	45	*	*	6	4	*	*	*	2
496	Water pack	1 cup	246	100	2	2	30	15	2	2	2	4
497	Frozen, chunks, sweetened	1 cup	245	210	2	2	35	15	4	4	2	6
	Plums:											
498	Raw, including skin, except prunes, 2⅛-inch diameter.[19]	1 plum	70	30	*	4	6	2	2	2	*	2
	Canned (Italian prunes), with pits and liquid:											
499	Sirup pack	1 cup	272	210	2	60	8	4	2	4	2	15
500	Water pack	1 cup	262	110	2	60	8	4	2	4	2	15
501	Pomegranate, raw, 3⅜-inch diameter	1 pomegranate.	275	100	2	*	10	4	2	2	*	2
	Prunes, dried, "softenized," medium:											
502	Uncooked (with pits)	10 prunes	75	160	2	20	4	4	6	4	4	15
503	Cooked, fruit and liquid, unsweetened	1 cup	250	250	4	30	4	4	8	8	6	20
	Raisins, seedless:											
504	Packaged, 1½ oz or approx. ⅓ cup, not pressed down.	1 pkg	43	120	2	*	*	4	2	*	2	8
505	Cup, pressed down	1 cup	165	480	6	*	4	10	8	4	10	30
	Raspberries:											
506	Black, raw	1 cup	134	100	4	*	40	2	8	6	4	6
	Red:											
507	Raw	1 cup	123	70	2	4	50	2	6	6	2	6
508	Canned, fruit and liquid, unsweetened	1 cup	243	90	2	4	35	2	6	6	4	8
509	Frozen, sweetened	1 cup	250	250	2	4	90	4	8	8	4	8
510	Rhubarb, cooked, sweetened	1 cup	270	380	2	4	25	4	8	4	20	8
	Strawberries:											
511	Raw, whole berries, capped	1 cup	149	60	2	2	150	2	6	4	4	8
512	Canned, fruit and liquid, water pack	1 cup	242	60	2	2	80	2	4	4	4	10
513	Frozen, sweetened	1 cup	255	280	2	2	230	4	8	6	4	10
514	Tangelo, raw, medium, 2⁹⁄₁₆-inch diameter[28]	1 tangelo	170	40	*	8	45	4	2	*	2	2
515	Tangerine, raw, medium, 2⅜-inch diameter, size 176.[19]	1 tangerine	116	40	2	8	45	4	2	*	4	2
	Watermelon, raw:											
516	Diced pieces	1 cup	160	40	2	20	20	4	2	2	2	4

517	Wedge, 4 × 8 inches (1/16 of 10 × 16-inch melon, about 2 lbs with rind).	1 wedge	926	110	4	50	50	8	8	4	2	10
	Fruit juices:											
518	Apple juice, bottled or canned	1 cup	248	120	*	*	4	2	2	*	2	8
	Grapefruit juice:											
519	Fresh	1 cup	246	100	2	4[29]	160	6	2	2	2	2
	Canned:											
520	Sweetened	1 cup	250	130	2	*	130	4	2	2	2	6
521	Unsweetened	1 cup	247	100	2	*	140	4	2	2	2	6
	Frozen concentrate, diluted with 3 parts water by volume:											
522	Sweetened	1 cup	248	120	2	*	140	4	2	2	2	2
523	Unsweetened	1 cup	247	100	2	*	160	6	2	2	2	2
	Grape juice:											
524	Canned or bottled	1 cup	253	170	*	*	*	6	2	2	2	4
525	Frozen concentrate, sweetened, diluted with 3 parts water by volume.	1 cup	250	130	*	*	15[30]	4	4	2	*	2
526	Lemon juice, fresh	1 cup	244	60	2	*	190	4	2	*	2	2
527	Lime juice, fresh	1 cup	246	60	2	*	130	4	2	*	2	2
	Orange juice:											
528	Fresh, all varieties	1 cup	248	110	2	10	210	15	4	4	2	2
	Canned:											
529	Sweetened	1 cup	250	130	2	10	170	10	2	4	2	6
530	Unsweetened	1 cup	249	120	4	10	170	10	2	4	2	6
531	Concentrate, canned, unsweetened, diluted with 5 parts water by volume.	1 cup	248	110	4	10	200	15	2	4	2	4
532	Concentrate, frozen, unsweetened, diluted with 3 parts water by volume.	1 cup	249	120	2	10	200	15	2	4	2	2
	Pineapple juice:											
533	Canned, unsweetened	1 cup	250	140	2	2	40[30]	8	2	2	4	4
534	Frozen, concentrate, unsweetened, diluted with 3 parts water by volume.	1 cup	250	130	2	*	50[30]	10	2	2	2	4
535	Prune juice, canned or bottled	1 cup	256	200	2	30	8[30]	2	2	4	4	60
	Tangerine juice:											
536	Canned, sweetened	1 cup	249	120	2	20	90	10	2	*	4	2
537	Frozen concentrate, unsweetened, diluted with 3 parts water by volume.	1 cup	248	110	2	20	110	10	2	*	4	2
	CEREAL AND BAKERY PRODUCTS											
	Breads and crackers:											
	Bagel, 3-inch diameter:											
538	Egg	1 bagel	55	165	10	*	*	10	6	6	*	6
539	Water	1 bagel	55	165	10	*	*	10	6	8	*	6
	Biscuits, baking powder, 2-inch diameter:[16]											
540	From home recipe with enriched flour	1 biscuit	28	100	4	*	*	6	4	4	4	8

*None or less than 1 percent.

See footnotes at end of table.

(Continued on page 526)

APPENDIX G (Continued)

	Food, Approximate Measure, and Weight (in grams)		Food Energy	Protein	Vitamin A	Vitamin C	Thiamin	Riboflavin	Niacin	Calcium	Iron
	CEREAL AND BAKERY PRODUCTS—Continued	Grams	Calories	Percentage of U.S. RDA							
541	From enriched flour mix, made with milk ..... 1 biscuit	28	90	4	*	*	6	4	4	2	8
	Breads:[31]										
542	Boston brown bread, canned, slice, 3¼ x ½ inch 1 slice	45	100	4	*	*	4	2	2	4	4
543	Cracked-wheat bread, 18 slices per 1-lb loaf 1 slice	25	70	4	*	*	2	2	2	2	2
	French bread, slice 5 x 2½ x 1 inch:										
544	Enriched[16] ..... 1 slice	35	100	4	*	*	10	4	6	2	10
545	Unenriched ..... 1 slice	35	100	4	*	*	2	2	2	2	2
	Italian bread, slice 4½ x 3¼ x ¾ inch:										
546	Enriched[16] ..... 1 slice	30	80	4	*	*	8	4	6	*	8
547	Unenriched ..... 1 slice	30	80	4	*	*	2	2	*	*	2
	Vienna bread, slice 4¾ x 4 x ½ inch:										
548	Enriched[16] ..... 1 slice	25	70	4	*	*	6	4	4	2	8
549	Unenriched ..... 1 slice	25	70	4	*	*	2	2	*	2	2
550	Raisin bread, 18 slices per 1-lb loaf ..... 1 slice	25	70	2	*	*	*	2	*	2	2
	Rye bread:										
551	American, light (⅓ rye, ⅔ wheat flour), 18 slices per 1-lb loaf. 1 slice	25	60	4	*	*	4	2	2	2	2
552	Pumpernickel, slice, 5 x 4 x ⅜ inch ..... 1 slice	32	80	4	*	*	4	2	2	2	4
553	Salt-rising bread, unenriched, 19 slices per 1-lb loaf. 1 slice	24	60	2	*	*	*	*	*	*	*
	White bread, enriched:[16]										
	Soft-crumb type:										
554	18 slices per 1-lb loaf ..... 1 slice	25	70	4	*	*	6	4	4	2	8
555	24 slices per 1½-lb loaf ..... 1 slice	28	80	4	*	*	8	4	4	2	8
	Firm-crumb type:										
556	20 slices per 1-lb loaf ..... 1 slice	23	60	4	*	*	6	4	4	2	8
557	34 slices per 2-lb loaf ..... 1 slice	27	70	4	*	*	8	4	4	2	8
	White bread, unenriched:										
	Soft-crumb type:										
558	18 slices per 1-lb loaf ..... 1 slice	25	70	4	*	*	2	2	2	2	2
559	24 slices per 1½-lb loaf ..... 1 slice	28	80	4	*	*	2	2	2	2	2
	Firm-crumb type:										
560	20 slices per 1-lb loaf ..... 1 slice	23	60	4	*	*	2	2	*	2	2
561	34 slices per 2-lb loaf ..... 1 slice	27	70	4	*	*	2	2	*	2	2
	Whole-wheat bread:										
562	Soft-crumb type, 16 slices per 1-lb loaf ..... 1 slice	28	70	4	*	*	6	2	4	2	4
563	Firm-crumb type, 18 slices per 1-lb loaf ..... 1 slice	25	60	4	*	*	4	2	4	2	4

564	Breadcrumbs, dry, grated (enriched)[16]	1 cup	100	390	20	*	*	25	20	25	10	45
	Cornbread, baked from home recipe:											
565	Corn pone, made with white, whole-ground cornmeal; sector, ⅛ of pone, 9-inch diameter.	1 sector	60	120	4	*	*	6	2	2	4	4
566	Southern style, made with enriched, degermed cornmeal (2½ x 2½ x 1½ inches).	1 piece	83	190	10	2	2	10	10	4	8	6
567	Spoonbread, made with white, whole-ground cornmeal.	1 cup	240	470	25	15	*	15	25	4	25	15
568	Cornbread, baked from mix; made with egg and milk (2½ x 2½ x 1⅜ inches).	1 piece	55	180	6	2	*	6	6	4	15	4
	Crackers:											
569	Butter, round, 1⅞-inch diameter	4 crackers	13	60	2	*	*	*	*	*	2	*
	Cheese:											
570	Rectangular sticks or 1-inch squares	10 crackers	9	45	2	*	*	*	*	*	4	*
571	Round, 1⅞-inch diameter	4 crackers	14	70	2	*	*	*	*	*	4	*
572	Graham, 2½ inches square	2 crackers	14	60	2	*	*	*	2	*	*	2
573	Saltines (packet)	4 crackers	11	50	2	*	*	*	*	*	*	*
573	Sandwich type, cheese-peanut butter; 1½-oz packet, 6 sandwiches.	1 packet	42	210	10	*	*	*	2	8	2	2
575	Soup or oyster (hexagon-shaped, ½-inch sides)	10 crackers	8	35	2	*	*	*	*	*	*	*
576	Danish pastry, plain (without fruit or nuts), round piece, approx. 4¼-inch diameter x 1 inch.	1 piece	65	270	8	4	*	4	6	2	4	4
	Muffins, baked from home recipe, made with enriched flour:[16]											
577	Blueberry (2⅜-inch diameter)	1 muffin	40	110	4	2	*	6	6	4	4	10
578	Bran (2⅝-inch diameter)	1 muffin	40	100	4	2	*	4	8	10	6	10
579	Corn, made with enriched, degermed cornmeal (2⅜-inch diameter).	1 muffin	40	130	4	2	*	6	6	4	4	4
580	Plain (3-inch diameter)	1 muffin	40	120	4	*	*	6	8	4	4	10
	Muffins, baked from mix; made with egg and milk:											
581	Corn, 2⅜-inch diameter	1 muffin	40	130	4	2	*	4	4	4	10	4
582	Popovers, baked from home recipe with enriched flour,[32] 2¾-inch diameter at top, 2 inches at bottom.	1 popover	40	90	6	2	*	4	8	4	4	6
	Rolls, enriched:[16]											
583	Brown and serve, pan or cloverleaf, browned	1 roll	26	90	4	*	*	8	4	4	2	8
	Cloverleaf or pan:											
584	Home recipe	1 roll	35	120	4	*	*	8	8	6	2	10
585	Commercial	1 roll	28	80	4	*	*	8	4	4	2	8
586	Frankfurter or hamburger	1 roll	40	120	6	*	*	10	6	6	2	10
587	Hard, round or rectangular	1 roll	50	160	8	*	*	15	8	8	2	15
588	Hoagie or submarine, 11½ x 3 x 2½ inches	1 roll	135	390	20	*	*	35	20	25	6	40
589	Parkerhouse, baked from frozen dough	1 roll	24	80	4	*	*	6	4	4	*	8

*None or less than 1 percent.
See footnotes at end of table.

(Continued on page 528)

APPENDIX G (Continued)

	Food, Approximate Measure, and Weight (in grams)		Grams	Food Energy	Protein	Vitamin A	Vitamin C	Thiamin	Riboflavin	Niacin	Calcium	Iron
	CEREAL AND BAKERY PRODUCTS—Continued			Calories	Percentage of U.S. RDA							
	Rolls, unenriched:											
590	Brown and serve, pan or cloverleaf, browned	1 roll	26	90	4	*	*	2	2	*	2	2
591	Cloverleaf or pan	1 roll	28	80	4	*	*	2	2	*	2	2
592	Frankfurter or hamburger	1 roll	40	120	6	*	*	2	2	2	2	2
593	Hard, round or rectangular	1 roll	50	160	8	*	*	2	2	2	2	2
594	Hoagie or submarine, 11½ x 3 x 2½ inches	1 roll	135	390	20	*	*	8	6	6	6	4
595	Parkerhouse, prepared from frozen dough	1 roll	24	80	4	*	*	2	2	*	*	2
596	Rye wafers, whole grain, 1⅞ x 3½ inches	2 wafers	13	45	2	*	*	2	2	*	*	2
	Salt sticks:											
597	Regular type (breadsticks without salt coating), stick, 7¾ x ¾ inch.	2 sticks	20	80	4	*	*	*	*	*	*	2
598	Vienna bread type, stick, 6½ x 1¼ inches	1 stick	35	110	6	*	*	2	2	2	2	2
599	Zwieback, approx. 3½ x 1½ x ½ inch	1 piece	7	30	2	*	*	*	*	*	*	*
	Cakes and doughnuts:											
	Cakes made from home recipes:[33]											
600	Angelfood, 1/16 of 9¾-inch-diameter tube cake.	1 piece	45	120	4	*	*	*	4	*	*	*
601	Boston cream pie, 1/12 of 8-inch-diameter cake	1 piece	69	210	6	2	*	2	4	*	4	2
602	Caramel with caramel icing, 2-layer cake	1 piece[34]	83	320	4	4	*	2	4	*	6	6
	Chocolate (devil's food):											
603	Without icing, sheet cake	1 piece[35]	39	140	2	2	*	*	2	*	2	2
604	With chocolate icing, 2-layer cake	1 piece[34]	78	290	6	2	*	2	4	*	6	4
	With uncooked white icing:											
605	Sheet cake	1 piece[35]	52	190	4	2	*	*	2	*	4	2
606	2-layer cake	1 piece[34]	77	280	4	2	*	2	4	*	4	2
607	Cupcake, 2¾-inch diameter with chocolate icing.	1 cupcake	44	160	4	2	*	*	2	*	4	2
	Cottage pudding, made with enriched flour,[16] 1/6 of 8 x 8 x 1½-inch cake:											
608	With 1⅓ tbsp chocolate sauce	1 piece	99	320	8	2	*	10	10	8	6	20
609	With 1⅓ tbsp strawberry sauce	1 piece	94	270	8	2	20	10	10	8	6	15
610	Fruitcake, dark, made with enriched flour,[16] 1/30 of 1-lb loaf.	1 slice	15	60	2	*	*	2	2	*	2	2
611	Fruitcake, light, made with enriched flour,[16] 1/30 of 1-lb loaf.	1 slice	15	60	2	*	*	2	2	*	*	2

612	Gingerbread, made with enriched flour[16]	1 piece[36]	117	370	6	2	*	15	8	8	8	20
	Plain cake:											
613	Without icing	1 piece[36]	86	310	6	2	*	2	4	*	6	2
614	With boiled white icing	1 piece[36]	114	400	6	2	*	2	4	*	6	2
615	With chocolate icing	1 piece[36]	123	450	8	4	*	2	6	*	8	4
616	Cupcake, 2¾-inch diameter, with uncooked white icing.	1 cupcake	47	170	2	2	*	*	2	*	2	*
617	Pound cake, 3½ x 3 x ½ inch	1 slice	30	150	2	2	*	*	2	*	2	2
618	Sponge, tube cake, 1/12 of 9¾-inch-diameter cake.	1 piece	66	200	8	6	*	2	6	*	2	4
619	White cake with uncooked white icing, 2-layer cake.	1 piece[34]	82	310	4	2	*	*	2	*	4	*
620	Yellow cake with chocolate icing, 2-layer cake	1 piece[34]	79	290	6	2	*	2	4	*	6	2
	Cakes, frozen, commercial, devil's food:											
621	With chocolate icing, 1/6 of 1-layer, 18-oz cake	1 piece	85	320	6	8	*	2	4	*	4	4
622	With whipped cream filling, chocolate icing, 1/6 of 2-layer, 18-oz cake.	1 piece	85	320	4	4	*	2	4	*	6	2
	Cakes, prepared and baked from mixes:											
623	Angelfood, 1/16 of 9¾-inch-diameter tube cake.	1 piece	40	100	4	*	*	*	2	*	4	*
624	Chocolate malt, made with eggs, water, with uncooked white icing, 2-layer cake.	1 piece[37]	67	230	4	2	*	2	2	*	4	2
625	Coffee cake, with enriched flour,[16] made with eggs and milk, 1/6 of cake.	1 piece	72	230	6	2	*	10	8	6	4	15
	Cupcakes, made with egg, milk, 2¾-inch diameter:											
626	Without icing	1 cupcake	33	120	2	*	*	*	2	*	6	2
627	With chocolate icing	1 cupcake	48	170	4	2	*	2	2	*	6	2
628	Devil's food, made with eggs, water, with chocolate icing, 2-layer cake.	1 piece[37]	69	230	4	2	*	2	4	*	4	4
629	Gingerbread, made with water, 2¾ x 2¾ x 1⅜ inches.	1 piece	63	170	4	*	*	2	4	2	6	6
630	Honey spice, made with eggs, water, with caramel icing, 2-layer cake.	1 piece[37]	77	270	4	2	*	2	4	*	6	4
631	Marble, made with eggs, water, with boiled white icing, 2-layer cake.	1 piece[37]	65	220	4	2	*	*	2	*	6	2
632	White, made with egg whites, water, with chocolate icing, 2-layer cake.	1 piece[37]	71	250	4	*	*	*	4	*	6	2
633	Yellow, made with eggs, water, with chocolate icing, 2-layer cake.	1 piece[37]	69	230	4	2	*	*	4	*	6	2
	Doughnuts, made with enriched flour:[28]											

*None or less than 1 percent.

See footnotes at end of table.

(Continued on page 530)

APPENDIX G (Continued)

	Food, Approximate Measure, and Weight (in grams)		Grams	Food Energy	Protein	Vitamin A	Vitamin C	Thiamin	Riboflavin	Niacin	Calcium	Iron
	CEREAL AND BAKERY PRODUCTS—Continued			Calories	Percentage of U.S. RDA							
634	Cake type, plain, 3¼-inch diameter, 1 inch high.	1 doughnut	42	160	2	*	*	6	6	4	2	8
635	Yeast leavened, plain, 3¾-inch diameter, 1¼ inches high.	1 doughnut	42	170	4	*	*	6	6	4	2	10
	Cereals:											
636	Ready-to-eat[39]	1 oz	28	110	4	20	20	25	25	20	*	20
	Hot cooked:											
637	Bulgur, canned, unseasoned	1 cup	135	230	15	*	*	4	2	15	2	10
	Corn grits, degermed:											
638	Enriched	1 cup	245	130	4	240	*	6	4	4	*	4
639	Unenriched	1 cup	245	130	4	240	*	4	2	2	*	2
	Cornmeal, white or yellow, degermed:											
640	Enriched	1 cup	240	120	4	2[40]	*	10	6	6	*	6
641	Unenriched	1 cup	240	120	4	2[40]	*	4	2	*	*	2
	Farina:											
	Enriched:											
642	Regular	1 cup	245	100	4	*	*	6[41]	4[41]	4[41]	*	70[41]
643	Quick-cooking	1 cup	245	110	4	*	*	8[41]	4[41]	4[41]	15	70[41]
644	Instant-cooking	1 cup	245	140	6	*	*	10[41]	6[41]	6[41]	20	90[41]
645	Unenriched, regular	1 cup	245	100	4	*	*	2	2	*	*	2
646	Oat flakes, maple-flavored, quick-cooking	1 cup	240	170	10	*	*	10	4	2	2	8
647	Oat granules, maple-flavored, regular	1 cup	245	150	8	*	*	10	4	2	2	8
648	Oatmeal or rolled oats, regular or quick-cooking.	1 cup	240	130	8	*	*	15	2	*	2	8
649	Oat and wheat cereal	1 cup	245	160	10	*	*	15	4	6	2	10
650	Rice breakfast cereal, added nutrients	1 cup	245	120	4	*	*	10	2	10	*	10
651	Rice, brown, long grain, hot	1 cup	195	230	8	*	*	10	2	15	2	6
	Rice, white, enriched:											
652	Common, commercial, hot	1 cup	205	220	6	*	*	15[42]	2[42]	10[42]	2	10[42]
653	cold	1 cup	145	160	4	*	*	10[42]	*[42]	6[42]	2	8[42]
654	Instant, ready-to-serve, fluffed, hot	1 cup	165	180	6	*	*	15[42]	2[42]	8[42]	*	8[42]
655	cold	1 cup	130	140	4	*	*	10[42]	*[42]	6[42]	*	6[42]
656	Parboiled, long-grain, hot	1 cup	175	190	6	*	*	15[42]	2[42]	10[42]	4	8[42]
657	cold	1 cup	145	150	4	*	*	10[42]	*[42]	8[42]	2	2[42]

658	Rice, white, unenriched, hot	1 cup	205	220	6	*	*	2	2	4	2	2
659	Spanish rice, cooked from home recipe	1 cup	245	210	6	30	60	6	4	8	4	8
	Wheat breakfast cereals:											
660	Rolled	1 cup	240	140	6	*	*	10	2	8	2	6
661	Whole-meal	1 cup	245	110	6	*	*	10	2	8	2	6
	With malted barley, toasted:											
662	Quick-cooking	1 cup	245	160	8	*	*	8	2	*	2	6
663	Instant-cooking	1 cup	245	200	10	*	*	10	2	*	2	10
	Cookies:											
664	Animal crackers	5 crackers	13	60	2	*	*	*	*	*	*	*
	Brownies with nuts:[16]											
665	Baked from home recipe, enriched flour	1 brownie	20	100	2	*	*	4	2	2	*	2
666	Frozen, with chocolate icing	1 brownie	24	100	2	2	*	2	2	*	*	2
667	Butter, thin, rich, 2-inch diameter	4 cookies	20	90	2	2	*	*	*	*	2	*
	Chocolate chip:											
668	Baked from home recipe, enriched flour,[16] 2⅓-inch diameter.	4 cookies	40	210	4	*	*	4	4	4	2	10
669	Commercial type, 2¼-inch diameter	4 cookies	42	200	4	*	*	2	2	*	2	4
670	Chocolate-coated graham cracker, 2½ x 2 inches.	1 cracker	13	60	2	*	*	*	2	*	2	2
671	Coconut bars, 2½ inches long	4 cookies	36	180	4	2	*	*	2	*	2	2
672	Fig bars	2 cookies	28	100	2	*	*	*	2	*	2	2
673	Gingersnaps, 2-inch diameter	4 cookies	28	120	2	*	*	*	2	*	2	4
674	Ladyfingers, whole	4 ladyfingers	44	160	6	6	*	2	4	*	2	4
675	Macaroons, 2¾-inch diameter	2 cookies	38	180	4	*	*	2	4	*	*	2
676	Molasses, 3⅝-inch diameter	1 cookie	32	140	4	*	*	*	2	*	2	4
677	Oatmeal, with raisins, 2⅝-inch diameter	2 cookies	26	120	2	*	*	2	2	*	*	4
	Sandwich type, 1¾-inch diameter:											
678	Chocolate or vanilla	2 cookies	20	100	2	*	*	*	*	*	*	*
679	Peanut filling	2 cookies	25	120	4	*	*	2	2	4	2	2
680	Shortbread, 1⅝ inches	4 cookies	30	150	4	*	*	*	*	*	2	*
681	Sugar, soft, thick, baked from home recipe with enriched flour,[16] 2¼-inch diameter.	4 cookies	32	140	2	*	*	4	4	4	2	6
682	Sugar wafers	4 cookies	38	180	2	2	*	*	2	*	2	*
683	Vanilla wafers, 1¾-inch diameter	5 cookies	20	90	2	*	*	*	*	*	*	*
684	crumbled	1 cup	80	370	6	2	*	2	4	*	4	2
	Pancakes and waffles:											
	Pancakes, 4-inch diameter:											
685	Buckwheat (made from mix, egg, and milk)	1 cake	27	60	2	2	*	2	2	*	6	2
686	Plain or buttermilk (made from enriched-flour mix,[16] egg, and milk).	1 cake	27	60	2	2	*	4	4	2	6	4

*None or less than 1 percent.

See footnotes at end of table.

(Continued on page 532)

APPENDIX G (Continued)

	Food, Approximate Measure, and Weight (in grams)			Food Energy	Protein	Vitamin A	Vitamin C	Thiamin	Riboflavin	Niacin	Calcium	Iron
	CEREAL AND BAKERY PRODUCTS—Continued		Grams	Calories	Percentage of U.S. RDA							
687	Plain, made from home recipe with enriched flour.[16]	1 cake	27	60	2	*	*	4	4	2	2	6
	Waffles, 4½ inches square:[16]											
688	Baked from home recipe with enriched flour	1 waffle	50	140	8	4	*	8	10	6	6	10
689	Made from mix (enriched), egg, and milk	1 waffle	50	140	6	2	*	6	8	4	10	10
	Frozen, made with enriched flour:											
690	10 waffles per 12-oz container	1 waffle	34	90	4	*	*	6	4	4	4	8
691	12 waffles per 9-oz container	1 waffle	22	60	2	*	*	4	2	2	2	6
	Pasta and noodles:											
	Macaroni:											
	Enriched:											
692	Cooked, tender stage, hot	1 cup	140	160	8	*	*	15[43]	6[43]	8[43]	2	8[43]
693	cold	1 cup	105	120	6	*	*	10[43]	4[43]	6[43]	*	4[43]
694	Cooked, firm stage	1 cup	130	190	10	*	*	15[43]	8[43]	8[43]	2	8[43]
	Unenriched:											
695	Cooked, tender stage, hot	1 cup	140	160	8	*	*	*	*	2	2	4
696	cold	1 cup	105	120	6	*	*	*	*	2	*	2
697	Cooked, firm stage	1 cup	130	190	10	*	*	2	2	2	2	4
	Noodles (egg noodles), cooked:											
698	Enriched	1 cup	160	200	10	2	*	15[43]	8[43]	10[43]	2	8[43]
699	Unenriched	1 cup	160	200	10	2	*	4	2	4	2	6
700	Noodles, chow mein, canned	1 cup	45	220	10	*	*	4	2	4	2	2
	Spaghetti, enriched:											
701	Cooked, firm stage, "al dente"	1 cup	130	190	10	*	*	15[43]	8[43]	8[43]	2	8[43]
702	Cooked, tender stage	1 cup	140	160	8	*	*	15[43]	6[43]	8[43]	2	8[43]
	Spaghetti, unenriched:											
703	Cooked, firm stage, "al dente"	1 cup	130	190	10	*	*	2	2	2	2	4
704	Cooked, tender stage	1 cup	140	160	8	*	*	*	*	2	2	4
	Pies:											
	Pie (piecrust made with unenriched flour):[44]											
	Sector, 4¾ inches, ⅛ of 9-inch-diameter pie:											
705	Apple (2 crust)	1 sector	158	400	6	*	4	2	2	4	2	2
706	Banana custard (1 crust)	1 sector	152	340	10	8	4	4	10	2	10	4
707	Blackberry (2 crust)	1 sector	158	380	6	2	10	2	2	2	2	4

708	Blueberry (2 crust)	1 sector	158	380	6	*	8	2	2	2	2	4
709	Butterscotch (1 crust)	1 sector	152	410	10	8	*	4	8	2	10	8
710	Cherry (2 crust)	1 sector	158	410	6	15	*	2	2	4	2	2
711	Chocolate chiffon (1 crust)	1 sector	108	350	10	6	*	2	6	*	2	8
712	Chocolate meringue (1 crust)	1 sector	152	380	10	6	*	4	10	2	10	6
713	Coconut custard (1 crust)	1 sector	152	360	15	6	*	6	15	2	15	6
714	Custard (1 crust)	1 sector	152	330	15	6	*	6	15	2	15	4
715	Lemon chiffon (1 crust)	1 sector	108	340	10	4	4	2	6	*	2	6
716	Lemon meringue (1 crust)	1 sector	140	360	8	4	6	2	6	2	2	4
717	Mince (2 crust)	1 sector	158	430	6	*	4	8	4	4	4	8
718	Peach (2 crust)	1 sector	158	400	6	25	8	2	4	6	2	4
719	Pecan (1 crust)	1 sector	138	580	10	4	*	15	6	2	6	20
720	Pineapple (2 crust)	1 sector	158	400	6	*	4	4	2	4	2	4
721	Pineapple chiffon (1 crust)	1 sector	108	310	10	8	2	2	6	2	2	6
722	Pineapple custard (1 crust)	1 sector	152	330	10	6	4	4	8	4	8	4
723	Pumpkin (1 crust)	1 sector	152	320	10	80	*	4	8	4	8	4
724	Raisin (2 crust)	1 sector	158	430	6	*	4	4	2	2	2	8
725	Rhubarb (2 crust)	1 sector	158	400	6	2	8	2	4	2	10	6
726	Strawberry (1 crust)	1 sector	124	250	4	*	50	2	2	2	2	4
727	Sweetpotato (1 crust)	1 sector	152	320	10	70	10	6	10	2	10	4
	Pie, frozen in unbaked form, baked:											
	Sector, 4⅛ inches, ⅛ of 8-inch-diameter pie:											
728	Apple	1 sector	92	230	2	*	*	2	2	*	*	2
729	Cherry	1 sector	97	280	4	6	4	2	2	*	2	2
730	Coconut custard	1 sector	100	250	10	4	*	2	10	*	10	4
	Pie crust, baked shell for pie, made with:											
731	Enriched flour[16]	1 shell	180	900	15	*	*	35	20	25	2	50
732	Unenriched flour	1 shell	180	900	15	*	*	4	2	4	2	4
	Miscellaneous cereal and bakery products:											
	Bread stuffing, prepared from mix:											
733	Dry, crumbly, prepared with water, table fat	1 cup	140	500	15	20	*	8	10	10	10	10
734	Moist, prepared with water, egg, table fat	1 cup	200	420	15	15	*	6	10	8	8	10
	Popcorn, popped (commercial):											
735	Plain, large kernel	1 cup	6	25	2	*	*	2	*	*	*	2
736	Oil and salt added, large kernel	1 cup	9	40	2	*	*	2	*	*	*	2
737	Sugar coated	1 cup	35	130	4	*	*	8	2	2	*	2
	Pretzels:											
738	Dutch, twisted	1 pretzel	16	60	2	*	*	*	*	*	*	2
739	Thins, twisted	1 pretzel	6	25	*	*	*	*	*	*	*	*
740	Sticks, 3⅛ inches long	10 pretzels	6	25	*	*	*	*	*	*	*	*

*None or less than 1 percent.

See footnotes at end of table.

(Continued on page 534)

APPENDIX G (Continued)

	Food, Approximate Measure, and Weight (in grams)		Grams	Food Energy	Protein	Vitamin A	Vitamin C	Thiamin	Riboflavin	Niacin	Calcium	Iron
	MISCELLANEOUS			Calories	Percentage of U.S. RDA							
	Beverages:											
	Alcoholic:											
741	Beer	1 cup	240	100	2	*	*	*	4	6	2	*
	Gin, rum, vodka, whiskey:											
742	80-proof	1 fl oz	28	70	*	*	*	*	*	*	*	*
743	86-proof	1 fl oz	28	70	*	*	*	*	*	*	*	*
744	90-proof	1 fl oz	28	70	*	*	*	*	*	*	*	*
745	94-proof	1 fl oz	28	80	*	*	*	*	*	*	*	*
746	100-proof	1 fl oz	28	80	*	*	*	*	*	*	*	*
	Wines:											
747	Dessert[45]	1 fl oz	30	40	*	*	*	*	*	*	*	*
748	Table[46]	1 fl oz	29	25	*	*	*	*	*	*	*	*
	Carbonated:											
749	Ginger ale	1 cup	244	70	*	*	*	*	*	*	*	*
750	Root beer	1 cup	247	100	*	*	*	*	*	*	*	*
	Sodas:											
751	Club	1 cup	237	*	*	*	*	*	*	*	*	*
752	Cola type	1 cup	247	90	*	*	*	*	*	*	*	*
753	Cream	1 cup	247	105	*	*	*	*	*	*	*	*
754	Fruit flavored	1 cup	248	110	*	*	*	*	*	*	*	*
755	Quinine (sweetened)	1 cup	244	70	*	*	*	*	*	*	*	*
	Fruit juice drinks:											
756	Apricot nectar	1 cup	251	140	2	50	15[30]	2	2	2	2	2
757	Cranberry juice cocktail, bottled, sweetened	1 cup	253	160	*	*	70[47]	2	2	*	2	4
758	Grapefruit juice, prepared from dehydrated crystals with water (1 lb yields about 1 gal).	1 cup	247	100	2	*	150	6	2	2	2	2
759	Grape juice drink, canned	1 cup	250	140	*	*	70[48]	2[48]	2[48]	2	*	2
760	Lemonade concentrate, frozen, diluted with 4⅓ parts water by volume.	1 cup	248	110	*	*	30	*	2	*	*	*
761	Limeade concentrate, frozen, diluted with 4⅓ parts water by volume.	1 cup	247	100	*	*	8	*	*	*	*	*
762	Orange juice, prepared from dehydrated crystals (1 lb yields about 1 gal).	1 cup	248	110	2	10	180	15	4	4	2	2
763	Orange-apricot juice drink, canned	1 cup	249	120	2	30	70[47]	4	2	2	2	2
764	Peach nectar, canned	1 cup	249	120	*	30	*[30]	2	2	4	*	2
765	Pear nectar, canned	1 cup	250	130	2	*	*[30]	*	2	*	*	2

766	Pineapple-grapefruit juice drink, canned	1 cup	250	140	*	*	70[47]	4	2	2	2	2
767	Pineapple-orange juice drink, canned	1 cup	250	140	*	2	70[47]	4	2	2	2	2
	Desserts (not previously listed):											
768	Apple brown betty[49]	1 cup	215	330	6	4	4	10	6	6	4	15
769	Bread pudding with raisins[49]	1 cup	265	500	25	15	4	15	35	10	30	20
770	Charlotte Russe, with ladyfingers, whipped cream filling (approx. 4 ladyfingers, ⅓ cup of filling).	1 serving	114	330	10	15	*	2	6	*	6	4
771	Cream puffs with custard filling (approx. 3½-inch diameter, 2 inches high).	1 cream puff	130	300	15	10	*	4	15	*	10	4
772	Eclairs with custard filling and chocolate icing (approx. 5 inches long, 2 inches wide, 1¾ inches high).	1 eclair	100	240	10	6	*	2	10	*	8	4
	Gelatin desserts made with water:											
773	Plain	1 cup	240	140	6	*	*	*	*	*	*	*
774	With fruit added	1 cup	240	160	4	*	10	*	*	*	*	*
775	Ices, water	1 cup	193	250	2	*	4	*	*	*	*	*
	Prune whip, baked:											
776	Served hot	1 cup	90	140	6	8	4	2	8	2	2	6
777	Served cold	1 cup	130	200	8	10	4	2	10	4	2	10
778	Rice pudding with raisins	1 cup	265	390	15	6	*	6	20	2	25	6
779	Sherbet	1 cup	193	260	2	2	6	2	4	*	4	*
	Fats, oils:											
	Butter:											
	Regular, 4 sticks per lb:											
780	2 sticks	1 cup	227	1630	2	150[50]	*	*	*	*	4	*
781	Tablespoon (approx. ⅛ stick)	1 tbsp	14	100	*	10[50]	*	*	*	*	*	*
782	Pat (1-inch square, ⅓ inch high; 90 per lb)	1 pat	5	35	*	4[50]	*	*	*	*	*	*
	Whipped, 6 sticks or 2 8-oz tubs per lb:											
783	Approx. 2 sticks or ⅔ of an 8-oz tub	1 cup	151	1080	2	100[50]	*	*	*	*	2	*
784	Tablespoon (approx. ⅛ stick)	1 tbsp	9	70	*	6[50]	*	*	*	*	*	*
	Fats, cooking:											
785	Lard	1 cup	205	1850	*	*	*	*	*	*	*	*
786		1 tbsp	13	120	*	*	*	*	*	*	*	*
787	Vegetable fat, mixed-fat shortenings	1 cup	200	1770	*	*	*	*	*	*	*	*
788		1 tbsp	13	110	*	*	*	*	*	*	*	*
	Margarine:											
	Regular, 4 sticks per pound or soft, 2 8-oz tubs per lb:											
789	2 sticks or 1 tub	1 cup	227	1630	2	150[51]	*	*	*	*	4	*
790	Tablespoon (approx. ⅛ stick)	1 tbsp	14	100	*	10[51]	*	*	*	*	*	*

*None or less than 1 percent.

See footnotes at end of table.

(Continued on page 536)

APPENDIX G (Continued)

	Food, Approximate Measure, and Weight (in grams)			Food Energy	Protein	Vitamin A	Vitamin C	Thiamin	Riboflavin	Niacin	Calcium	Iron
	MISCELLANEOUS—Continued		Grams	Calories	Percentage of U.S. RDA							
791	Pat (1-inch square, ⅓ inch high; 90 per lb)	1 pat	5	35	*	4[51]	*	*	*	*	*	*
	Whipped, 6 sticks or 2 8-oz tubs, per lb:											
792	Approx. 2 sticks or ⅔ of an 8-oz tub	1 cup	151	1090	2	100[51]	*	*	*	*	2	*
793	Tablespoon (approx. ⅛ stick)	1 tbsp	9	70	*	6[51]	*	*	*	*	*	*
794	Oils, salad or cooking	1 cup	218	1930	*	*	*	*	*	*	*	*
795		1 tbsp	14	120	*	*	*	*	*	*	*	*
	Salad dressing, commercial:											
796	Blue or Roquefort cheese	1 tbsp	15	80	2	*	*	*	2	*	2	*
797	French	1 tbsp	16	70	*	*	*	*	*	*	*	*
798	Italian	1 tbsp	15	80	*	*	*	*	*	*	*	*
799	Mayonnaise	1 tbsp	14	100	*	*	*	*	*	*	*	*
800	Mayonnaise-type salad dressing	1 tbsp	15	70	*	*	*	*	*	*	*	*
801	Russian	1 tbsp	15	70	*	2	2	*	*	*	*	*
802	Thousand Island	1 tbsp	16	80	*	2	*	*	*	*	*	*
	Salad dressings made from home recipe:											
803	Boiled	1 tbsp	16	25	2	2	*	*	2	*	2	*
804	French	1 tbsp	14	90	*	*	*	*	*	*	*	*
805	Sandwich spread (with chopped pickle)	1 tbsp	15	60	*	*	2	*	*	*	*	*
	Relishes:											
806	Apple butter	1 tbsp	18	35	*	*	*	*	*	*	*	*
807	Cranberry sauce, sweetened, canned, strained	1 cup	277	400	*	2	10	2	2	*	2	4
808	Mustard, prepared	1 tsp, serving pouch, or serving cup.	5	4	*	*	*	*	*	*	*	*
	Olives:											
809	Green	4 medium or 3 extra large or 2 giant.	16	20	*	*	*	*	*	*	*	2
810	Ripe, mission	3 small or 2 large.	10	18	*	*	*	*	*	*	2	2
	Pickles, cucumber:											
811	Dill, medium, whole, 3¾ inches long, 1¼-inch diameter.	1 pickle	65	8	*	2	6	*	*	*	2	4
812	Dill, sliced crosswise	1 cup	155	18	2	4	15	*	2	*	4	8
813	Fresh, sweetened, sliced	1 cup	170	120	2	4	25	*	2	*	6	15
814	Sweet, gherkin, small, whole, approx. 2½ inches long, ¾-inch diameter.	1 pickle	15	22	*	*	2	*	*	*	*	2

815	Relish, finely cut or chopped, sweet	1 tbsp	15	22	*	*	2	*	*	*	*	*
816	Soy sauce	1 tbsp	18	12	2	*	*	*	2	*	2	4
817	Tartar sauce	1 tbsp	14	70	*	*	*	*	*	*	*	*
818	Tomato catsup	1 cup	273	290	8	80	70	15	10	20	6	10
819		1 tbsp	15	16	*	4	4	*	*	*	*	*
820	Tomato chili sauce	1 cup	273	280	10	80	70	15	10	20	6	10
821		1 tbsp	15	16	*	4	4	*	*	*	*	*
	Sauces:											
822	Barbecue sauce	1 cup	250	230	6	20	20	2	2	4	6	10
	White sauce, made with enriched flour:[16]											
823	Thin	1 cup	250	300	15	15	*	8	25	4	30	4
824	Medium	1 cup	250	410	15	25	*	8	25	4	30	8
825	Thick	1 cup	250	500	15	30	*	10	25	6	25	10
	Soups:											
	Canned, condensed, ready-to-serve:											
	Prepared with an equal volume of milk:											
826	Cream of asparagus	1 cup	245	150	10	10	*	4	15	4	20	4
827	Cream of celery	1 cup	245	170	10	8	4	4	15	4	20	4
828	Cream of chicken	1 cup	245	180	10	10	4	4	15	4	15	2
829	Cream of mushroom	1 cup	245	220	10	4	*	4	20	4	20	2
830	Green pea	1 cup	250	210	15	10	15	6	15	6	20	6
831	Tomato	1 cup	250	170	10	25	25	6	15	6	15	4
	Prepared with an equal volume of water:											
832	Bean with pork	1 cup	250	170	10	15	4	8	4	4	6	10
833	Beef broth, bouillon, and consomme	1 cup	240	30	8	*	*	*	2	6	*	2
834	Beef noodle	1 cup	240	70	6	*	*	4	4	4	*	6
835	Chicken consomme	1 cup	240	22	6	*	*	*	2	6	2	6
836	Chicken gumbo	1 cup	240	60	4	4	8	2	2	6	2	2
837	Chicken noodle	1 cup	240	60	6	*	*	2	2	4	*	2
838	Chicken with rice	1 cup	240	50	4	2	*	*	2	4	*	2
839	Chicken vegetable	1 cup	245	80	6	45	*	2	2	4	2	2
840	Clam chowder, Manhattan type	1 cup	245	80	4	20	*	2	2	4	4	6
841	Cream of asparagus	1 cup	240	70	4	6	*	4	6	4	2	4
842	Cream of celery	1 cup	240	90	2	4	*	2	2	*	4	2
843	Cream of chicken	1 cup	240	90	4	8	*	2	2	2	2	2
844	Cream of mushroom	1 cup	240	130	4	2	*	2	8	4	4	2
845	Green pea	1 cup	245	130	8	6	10	4	2	4	4	6
846	Minestrone	1 cup	245	110	8	45	*	4	2	4	4	6
847	Onion	1 cup	240	70	8	*	*	*	2	*	2	2
848	Split pea	1 cup	245	150	15	8	*	15	8	8	2	8
849	Tomato	1 cup	245	90	4	20	20	4	2	6	2	4

*None or less than 1 percent.

See footnotes at end of table.

(Continued on page 538)

APPENDIX G (Continued)

	Food, Approximate Measure, and Weight (in grams)		Food Energy	Protein	Vitamin A	Vitamin C	Thiamin	Riboflavin	Niacin	Calcium	Iron
	MISCELLANEOUS—Continued	Grams	Calories	Percentage of U.S. RDA							
850	Turkey noodle	1 cup	240	80	6	4	*	4	2	6	2	4
851	Vegetable beef	1 cup	245	80	8	60	*	4	2	4	2	4
852	Vegetable with beef broth	1 cup	245	80	4	60	*	4	2	6	2	4
853	Vegetarian vegetable	1 cup	245	80	4	60	*	4	2	4	2	6
	Dehydrated, prepared with water:											
854	Beef noodle (2 oz mix in 3 cups water)	1 cup	240	70	4	*	*	6	2	4	*	2
855	Chicken noodle (2 oz mix in 4 cups water)	1 cup	240	60	2	*	*	4	2	2	*	2
856	Chicken rice (1½ oz mix in 3 cups water)	1 cup	240	50	2	*	*	*	*	*	*	*
857	Onion (1½ oz mix in 4 cups water)	1 cup	240	35	2	*	4	*	*	*	*	2
858	Pea, green (4 oz mix in 3 cups water)	1 cup	245	120	10	*	*	10	8	8	2	10
859	Tomato vegetable with noodles (2½ oz mix in 4 cups water).	1 cup	240	70	2	10	8	4	2	2	*	2
860	Oyster stew, home prepared (1 part oysters to 3 parts milk by volume).	1 cup	240	210	20	15	*	10	25	8	30	20
	Sugars and sweets:											
	Candy:											
861	Caramels, plain or chocolate	1 oz	28	110	2	*	*	*	2	*	4	2
862	Chocolate, milk, plain	1 oz	28	150	4	2	*	2	6	*	6	2
	Chocolate coated:											
863	All fondant	1 oz	28	120	*	*	*	*	2	*	2	2
864	Peanuts	1 oz	28	160	8	*	*	6	2	10	4	2
865	Raisins	1 oz	28	120	2	*	*	2	4	*	4	4
866	Fondant (candy corn, uncoated mints)	1 oz	28	100	*	*	*	*	*	*	*	2
867	Gumdrops, starch jelly pieces	1 oz	28	100	*	*	*	*	*	*	*	*
868	Hard	1 oz	28	110	*	*	*	*	*	*	*	2
869	Marshmallows, plain	1 oz	28	90	*	*	*	*	*	*	*	2
870	Peanut bars	1 oz	28	140	8	*	*	8	2	15	2	2
871	Peanut brittle	1 oz	28	120	2	*	*	2	*	4	*	4
872	Chocolate, bitter or baking	1 oz	28	140	4	*	*	*	4	2	2	10
	Chocolate-flavored sirup or topping:											
873	Thin type	2 tbsp	38	90	2	*	*	*	2	*	*	4
874	Fudge type	2 tbsp	38	120	2	2	*	*	4	*	4	2
	Chocolate-flavored beverage powder (approx. 4 heaping teaspoons per oz):											
875	With nonfat dry milk	1 oz	28	100	8	*	2	2	10	*	15	2
876	Without nonfat dry milk	1 oz	28	100	2	*	*	*	2	*	*	4
877	Honey, strained or extracted	1 tbsp	21	60	*	*	*	*	*	*	*	*
878	Jams and preserves	1 tbsp	20	60	*	*	*	*	*	*	*	2

879	Jellies	1 tbsp	18	50	*	*	2	*	*	*	*	2
880	Marmalade, citrus	1 tbsp	20	50	*	*	2	*	*	*	*	*
	Molasses, cane:											
881	Light (first extraction)	1 tbsp	20	50	*	*	*	*	*	*	4	4
882	Blackstrap (third extraction)	1 tbsp	20	45	*	*	*	2	2	2	15	20
	Sirups:											
883	Maple	1 tbsp	20	50	*	*	*	2	*	*	2	2
884	Sorghum	1 tbsp	21	60	*	*	*	2	2	*	4	15
885	Table blends, chiefly corn, light and dark	1 tbsp	20	60	*	*	*	*	*	*	*	4
	Sugars:											
886	Brown, firmly packed	1 cup	220	820	*	*	*	2	4	2	20	40
	White:											
887	Granulated	1 cup	200	770	*	*	*	*	*	*	*	2
888		1 tbsp	11	40	*	*	*	*	*	*	*	*
889	Powdered, unsifted, spooned into cup	1 cup	120	460	*	*	*	*	*	*	*	*

[1] Value applies to unfortified product; value for fortified product would be 30 percent.

[2] Contributed largely by beta-carotene used for coloring.

[3] Chocolate rennin dessert made from mix, with milk, weighs 255 grams. Calories and the percentage of the U.S. RDA for the other nutrients are as listed in this table.

[4] Cuts described as "lean and fat" contain proportions of fat considered to be typical.

[5] Prepared with bacon, butter or margarine, onion, celery, and bread cubes.

[6] Dipped in egg, milk or water, and bread crumbs.

[7] If bones are discarded, value will be greatly reduced.

[8] Dipped in egg, bread crumbs, and flour, or in batter.

[9] Prepared with flour, baking powder, butter, and egg.

[10] Prepared with bread cubes, butter, parsley, eggs, lemon juice, and catsup.

[11] Prepared with crab, butter or margarine, flour, milk, onion, green pepper, egg, and lemon juice.

[12] Prepared with butter, egg yolks, sherry, and cream.

[13] Prepared with salmon, rice, water, milk, bread cubes, eggs, parsley, green pepper, and lemon juice.

[14] Prepared with lobster, onion, sweet pickle, celery, eggs, salad dressing (mayonnaise type), and tomatoes.

[15] Prepared with tuna, celery, salad dressing (mayonnaise type), pickle, onion, and egg.

[16] Values for thiamin, riboflavin, niacin, and iron reflect the enrichment levels for flour specified by the Food and Drug Administration in October 1973 (Federal Register, No. 198, October 15, 1973).

[17] Prepared with canned flaked fish, bread cubes, eggs, tomatoes, onion, and butter or margarine.

[18] Based on unenriched flour. If product is made with enriched flour (see footnote 16), increase values per sector by the following amounts: Thiamin, 8 percent; riboflavin, 4 percent; niacin, 6 percent; iron, 10 percent.

[19] Measure and weight apply to entire vegetable or fruit (including parts not usually eaten). Unless noted, nutritive values are only for parts usually eaten.

[20] Based on yellow varieties; white varieties contain only traces of cryptoxanthin and carotenes, the pigments in corn that have biological activity.

[21] Value based on freshly harvested squash. The carotenoid content increases during storage, the amount of increase varying according to variety and conditions of storage.

[22] Based on fritters made with yellow sweet corn; with white corn the percentage of the U.S. RDA for vitamin A in one fritter is negligible.

[23] Based on corn pudding made with yellow sweet corn; with white corn the percentage of the U.S. RDA for vitamin A in 1 cup of pudding is 10 percent.

[24] This is the amount from the fruit. Additional vitamin C may be added by the manufacturer. Refer to the label for this information.

[25] Value for varieties with orange-colored flesh; for varieties with green-colored flesh the percentage of the U.S. RDA for vitamin A is about 10 percent.

[26] Based on yellow-fleshed varieties; for white-fleshed varieties the percentage of the U.S. RDA for vitamin A is negligible for a 115-gram peach and 2 percent for a cup of sliced peaches.

[27] This value includes ascorbic acid added by the manufacturer.

[28] Weight is for the whole fruit; nutritive values are for juice only.

[29] This represents an average of all varieties. For white-fleshed varieties the percentage of the U.S. RDA for vitamin A per cup is negligible; for red-fleshed varieties it is 20 percent per cup.

[30] Applies to product without added vitamin C. Check the label for addition of vitamin C by the manufacturer.

[31] Number of slices per loaf includes end slices.

[32] Based on product made with enriched flour (see footnote 16). With unenriched flour the approximate values for one popover are: Thiamin, 2 percent; riboflavin, 4 percent; niacin, negligible; iron, 2 percent.

[33] Unenriched cake flour and cooking fat used unless otherwise specified.

[34] Piece: One-twelfth of 8-inch-diameter, two-layer cake.

[35] Piece: 2 by 2 by 2 inches.

[36] Sheet cake, piece: 3 by 3 by 2 inches.

[37] Piece: One-sixteenth of 8- or 9-inch-diameter, two-layer cake.

(Continued on page 540)

APPENDIX G (Continued)

[38] Based on product made with enriched flour (see footnote 16). With unenriched flour the approximate values per doughnut are: Thiamin, negligible; riboflavin, 2 percent; niacin, 2 percent; iron, 2 percent.

[39] Based on average of values on labels of 59 varieties of ready-to-eat cereals, February 1973. Vitamin and mineral values vary widely among cereals. For more precise information refer to the label.

[40] This value is based on cornmeal made from yellow varieties of corn; cornmeal made from white varieties contains only a trace of vitamin A per cup.

[41] Values for thiamin, riboflavin, and niacin are based on the minimum levels of enrichment specified in standards of identity promulgated under the Federal Food, Drug, and Cosmetic Act (Federal Register, No. 20, December 20, 1955). The value for iron is based on a much higher level of enrichment.

[42] Values for thiamin, niacin, and iron are based on the minimum levels of enrichment specified in standards of identity promulgated under the Federal Food, Drug, and Cosmetic Act (Federal Register, No. 22, August 27, 1947). The value for riboflavin is based on unenriched rice. If the minimum level of enrichment for riboflavin specified in the standards of identity becomes effective, the value will be 8 percent per cup of parboiled or white rice.

[43] The values for thiamin, riboflavin, niacin, and iron are based on the minimum levels of enrichment specified in standards of identity promulgated under the Federal Food, Drug, and Cosmetic Act (Federal Register, No. 20, December 20, 1955).

[44] If pie is made with enriched flour (see footnote 16), increase values per sector by the following amounts:

Sector of one-crust pie weighing from 108 to 140 grams: Thiamin, 2 percent; riboflavin, 2 percent; niacin, 2 percent; iron, 2 percent.

Sector of one-crust pie weighing 152 grams: Thiamin, 4 percent; riboflavin, 2 percent; niacin, 2 percent; iron, 2 percent.

Sector of two-crust pie weighing 158 grams: Thiamin, 6 percent; riboflavin, 4 percent; niacin, 4 percent; iron, 4 percent.

[45] This group includes wines containing more than 15 percent alcohol by volume, such as apple, muscatel, sherry, port, and tokay; also aperitif wines and vermouth.

[46] This group includes wines containing less than 15 percent alcohol by volume, such as barbera, burgundy, cabernet, chablis, champagne, chianti, claret, Rhine wine, rosé, and sauterne. Cherry, peach, berry, and variety wines usually fall in this class, although some have an alcoholic content high enough to be classified with dessert wines (usually noted on the label).

[47] Based on products with labels stating that a 6-fluid-ounce serving provides 50 percent of the U.S. RDA.

[48] Ascorbic acid may be added as a preservative or as a nutrient. Sometimes the product is enriched with thiamin and riboflavin but not with ascorbic acid. Refer to the label for precise information.

[49] Made with enriched bread (see footnote 16).

[50] Year-round average.

[51] Based on the average vitamin A content of fortified margarine. Federal specifications for fortified margarine require a minimum of 15,000 International Units per pound.

APPENDIX H

Important Food Sources of Vitamins and Minerals

Source: USDA Agric. Inf. Btn. No. 382

The foods from Appendix G that are the best sources of each nutrient are shown in the accompanying lists. Foods are listed in descending order for each nutrient, according to the percentage of the U.S. RDA they provide. Consider the amount of food specified. It may not be the same as the amount you usually eat.

Percentages have been rounded off to the nearest percentage that would be shown on labels.

Consider a food superior to another food as the source of a nutrient only if it provides a substantially higher percentage of the U.S. RDA. Labeling regulations allow a manufacturer to claim that his food is superior to another food only if it contains at least 10 percent more of the U.S. RDA per serving specified on the label.

VITAMIN A

Food	*Percentage of U.S. RDA*	*Amount of food*
MEAT AND MEAT ALTERNATES:		
Liver, beef	910	3 ounces
Liver, calf	560	3 ounces
Liver, hog	250	3 ounces
Liver, chicken	60	1 ounce
Chicken or turkey potpie, home recipe	60	⅓ of 9-inch pie
Beef and vegetable stew	50	1 cup
VEGETABLES AND FRUIT:		
Carrots, canned	470	1 cup
Sweetpotatoes, mashed	400	1 cup
Carrots, cooked	330	1 cup
Spinach, canned	330	1 cup
Pumpkin, canned	310	1 cup
Sweetpotatoes, pieces, canned	310	1 cup
Collards, cooked	300	1 cup
Peas and carrots, cooked	300	1 cup
Spinach, cooked	290	1 cup
Dandelion greens, cooked	250	1 cup
Carrots, raw, grated	240	1 cup
Sweetpotatoes, boiled in skin	240	Medium potato
Turnip greens, canned, solids and liquid	220	1 cup
Cress, garden, cooked	210	1 cup
Chard, Swiss, cooked	190	1 cup
Mango, raw	190	1 fruit (⅔ pound)
Cantaloupe, raw	180	½ of 5-inch-diameter melon
Kale, cooked	180	1 cup
Mustard greens, cooked from frozen	180	1 cup
Sweetpotatoes, baked in skin	180	Medium potato
Turnip greens, cooked	180	1 cup
Vegetables, mixed, cooked	180	1 cup
Squash, winter, baked	170	1 cup
Mustard greens, cooked	160	1 cup
Apricots, dried, cooked	150	1 cup
Beet greens, cooked	150	1 cup
Cabbage, spoon, cooked	110	1 cup
Sweetpotatoes, candied	110	3-ounce piece
Broccoli, chopped, cooked from frozen	100	1 cup
Apricots, canned	90	1 cup
Broccoli, cooked	90	Medium stalk
Spinach, raw, chopped	90	1 cup
Apricots, dried, uncooked	80	10 medium halves
Broccoli, cut, cooked	80	1 cup
Melon balls, frozen, in sirup	70	1 cup
Pepper, red	70	1 pod
Apricots, raw	60	3 fruits
Peaches, dried, cooked	60	1 cup

APPENDIX H (Continued)

Plums, canned	60	1 cup
Carrots, strips, raw	60	6–8 strips (2½–3 inches long)
Papaya, raw, cubed	50	1 cup
Tomatoes, cooked	50	1 cup
Watermelon, raw	50	4 x 8-inch wedge (2 pounds)

CEREAL AND BAKERY PRODUCTS:

Pie, pumpkin	80	4¾-inch sector
Pie, sweetpotato	70	4¾-inch sector

MISCELLANEOUS:

Soup:		
Vegetable, with beef broth	60	1 cup
Vegetable, vegetarian	60	1 cup
Vegetable beef	60	1 cup
Apricot nectar	50	1 cup

VITAMIN C

Food	*Percentage of U.S. RDA*	*Amount of food*
MEAT AND MEAT ALTERNATES:		
Peppers, stuffed	120	1 pepper (6.5 ounces)
Lobster salad	80	A salad
Chop suey, with beef and pork, home recipe	60	1 cup
Liver, calf	50	3 ounces
VEGETABLES AND FRUIT:		
Broccoli, cooked	270	Medium stalk
Pepper, red, raw	250	1 pod
Collards, cooked	240	1 cup
Broccoli, cut, cooked	230	1 cup
Brussels sprouts, cooked	230	1 cup
Strawberries, frozen, sweetened	230	1 cup
Pepper, green, cooked	220	1 cup
Orange juice, fresh	210	1 cup
Orange juice, from frozen or canned concentrate	200	1 cup
Broccoli, chopped, cooked from frozen	180	1 cup
Kale, cooked	170	1 cup
Turnip greens, cooked	170	1 cup
Orange juice, canned	170	1 cup
Peaches, frozen	170	1 cup
Pepper, green, raw	160	1 pod
Grapefruit juice, fresh or from frozen unsweetened concentrate	160	1 cup
Cantaloupe, raw	150	½ of 5-inch-diameter melon
Orange sections, raw	150	1 cup
Strawberries, raw	150	1 cup
Grapefruit sections, raw, white or pink	140	1 cup
Grapefruit juice, canned, unsweetened	140	1 cup
Grapefruit juice, from frozen sweetened concentrate	140	1 cup
Grapefruit sections, canned, sirup pack	130	1 cup
Grapefruit juice, canned, sweetened	130	1 cup
Papaya, raw, cubed	130	1 cup
Grapefruit sections, canned, water pack	120	1 cup
Mango, raw	120	1 fruit (⅔ pound)
Cauliflower, cooked	120	1 cup
Cauliflower, raw	110	1 cup
Mustard greens, cooked	110	1 cup
Orange, raw	110	2⅝-inch-diameter orange
Tangerine juice, from frozen concentrate	110	1 cup
Tomatoes, cooked	100	1 cup
Raspberries, red, frozen	90	1 cup
Tangerine juice, canned	90	1 cup
Cabbage, cooked	80	1 cup
Cress, garden, cooked	80	1 cup
Spinach, cooked	80	1 cup
Strawberries, canned	80	1 cup
Cabbage, raw, finely shredded	70	1 cup
Cabbage, red, raw, shredded	70	1 cup

Rutabagas, cooked	70	1 cup
Tomatoes, raw	70	3-inch-diameter tomato
Turnip greens, canned, solids and liquid	70	1 cup
Tomato juice, canned or bottled	70	1 cup
Sauerkraut juice	70	1 cup
Grapefruit, white or pink, raw	70	½ medium fruit
Lemons, raw	70	1 lemon
Asparagus, pieces, cooked or canned	60	1 cup
Cabbage, common or savoy, raw, coarsely shredded	60	1 cup
Okra, sliced, cooked	60	1 cup
Peas, green, cooked	60	1 cup
Sauerkraut, canned	60	1 cup
Sweetpotatoes, canned, mashed	60	1 cup
Turnips, cooked	60	1 cup
Coleslaw	60	1 cup
Honeydew melon, raw	60	2 x 7-inch wedge (½ pound)
Loganberries, raw	60	1 cup
Melon balls, frozen, sirup pack	60	1 cup
Beans, lima, Fordhook, cooked from frozen	50	1 cup
Beans, lima, immature seeds, cooked	50	1 cup
Mustard greens, cooked from frozen	50	1 cup
Potato, baked in skin	50	Medium potato
Spinach, canned	50	1 cup
Blackberries, raw	50	1 cup
Raspberries, red, raw	50	1 cup
Watermelon, raw	50	4 x 8-inch wedge (2 pounds)
Pineapple juice, from frozen concentrate	50	1 cup
CEREAL AND BAKERY PRODUCTS:		
Spanish rice	60	1 cup
Pie, strawberry	50	4¾-inch sector
MISCELLANEOUS:		
Orange juice, from dehydrated crystals	180	1 cup
Grapefruit juice, from dehydrated crystals	150	1 cup
Cranberry juice cocktail	70	1 cup
Grape juice drink, canned	70	1 cup
Orange-apricot juice drink	70	1 cup
Pineapple-orange juice drink	70	1 cup
Pineapple-grapefruit juice drink	70	1 cup

THIAMIN

Food	*Percentage of U.S. RDA*	*Amount of food*
MEAT AND MEAT ALTERNATES:		
Sunflower seeds	190	1 cup
Pork, loin, chopped, lean	100	1 cup
Brazilnuts, shelled	90	1 cup
Pork, fresh or cured, ham or shoulder, chopped, lean	60	1 cup
Pork, loin, sliced, lean only	60	3 ounces
Pecans, halves	60	1 cup
Pork, loin, sliced, lean and fat	50	3 ounces
Pork, loin chop, lean and fat	50	2.7 ounces
Pork, fresh or cured, ham or shoulder, ground, lean	45	1 cup
Pork, loin chop, lean	40	2 ounces
Cashew nuts, whole kernels, roasted	40	1 cup
Filberts, whole kernels, shelled	40	1 cup
Pork, fresh or cured, ham or shoulder, sliced, lean	35	3 ounces
Pork, cured, shoulder, sliced, lean and fat	30	3 ounces
Pork, fresh, ham or shoulder, sliced, lean and fat	30	3 ounces
Kidney, beef	30	3 ounces
Peanuts	30	1 cup

(Continued on page 544)

APPENDIX H (Continued)

Pork, cured, ham, sliced, lean and fat	25	3 ounces
Spareribs	25	3 ounces
Spaghetti (enriched) with cheese, canned	25	1 cup
Cowpeas, dry cooked	25	1 cup
Soybeans, dry, cooked	25	1 cup
Almonds, whole, shelled	25	1 cup
Chestnuts, shelled	25	1 cup
Pumpkin kernels	25	1 cup
Walnuts, English, chopped	25	1 cup
Liver, hog	20	3 ounces
Beef potpie, home-prepared from enriched flour	20	1/3 of 9-inch pie
Chicken or turkey potpie, home-prepared from enriched flour	20	1/3 of 9-inch pie
Chop suey, with beef and pork, home recipe	20	1 cup
Beans, navy (pea), dry, cooked	20	1 cup
Peas, split, dry, cooked	20	1 cup
Walnuts, black, chopped	20	1 cup
Bacon, Canadian	15	1 slice
Lamb, leg or shoulder, chopped, lean	15	1 cup
Heart, beef, sliced	15	3 ounces
Liver, calf or beef	15	3 ounces
Polish sausage	15	2.4-ounce link
Pork sausage	15	1-ounce pattie or 2 links
Crab, deviled	15	1 cup
Lobster salad	15	A salad
Macaroni (enriched) and cheese, home recipe	15	1 cup
Spaghetti (enriched) with cheese, home recipe	15	1 cup
Spaghetti (enriched) with meatballs, home recipe	15	1 cup
Beans, canned, with pork and tomato sauce	15	1 cup
Beans, lima, Great Northern, or kidney, dry, cooked	15	1 cup

VEGETABLES AND FRUIT:

Cowpeas, cooked	35	1 cup
Peas, green, cooked	30	1 cup
Peas and carrots, cooked	20	1 cup
Beans, lima, fresh, cooked	20	1 cup
Asparagus, pieces, cooked	15	1 cup
Collards, cooked	15	1 cup
Cowpeas, canned, solids and liquid	15	1 cup
Okra, sliced, cooked	15	1 cup
Soybeans, sprouted seeds, raw or cooked	15	1 cup
Turnip greens, cooked	15	1 cup
Vegetables, mixed, cooked	15	1 cup
Potato salad, with cooked salad dressing	15	1 cup
Orange juice, fresh or from unsweetened frozen or canned concentrate	15	1 cup
Pineapple, canned, water or sirup pack	15	1 cup
Pineapple, frozen, sweetened	15	1 cup

CEREAL AND BAKERY PRODUCTS:

Hoagie roll, enriched	35	11 1/2-inch-long roll
Cereal, ready-to-eat (check label)	25	1 ounce
Hard roll, enriched	15	1 roll (1.8 ounces)
Spoonbread	15	1 cup
Oatmeal, cooked	15	1 cup
Oat and wheat cereal, cooked	15	1 cup
Macaroni, enriched, cooked	15	1 cup
Noodles, enriched, cooked	15	1 cup
Spaghetti, enriched, cooked	15	1 cup
Rice, white, enriched, cooked	15	1 cup
Gingerbread, with enriched flour	15	1/9 of 9-inch-square cake
Pie, pecan	15	4 3/4-inch sector

MISCELLANEOUS:

Orange juice, from dehydrated crystals	15	1 cup
Soup, split pea	15	1 cup
Bread pudding, with enriched bread	15	1 cup

RIBOFLAVIN

Food	Percentage of U.S. RDA	Amount of food
MILK AND MILK PRODUCTS:		
Cheese, cottage	35	1 cup
Milk, partially skimmed	30	1 cup
Malted beverage	30	1 cup
Custard, baked	30	1 cup
Milk, whole or skim	25	1 cup
Milk, nonfat dry, reconstituted	25	1 cup
Buttermilk	25	1 cup
Chocolate drink	25	1 cup
Cocoa	25	1 cup
Ice milk, soft-serve	25	1 cup
Pudding, from mixes, with milk	25	1 cup
Pudding, vanilla, home recipe	25	1 cup
Rennin desserts	25	1 cup
Yogurt	25	1 cup
Ice cream, soft-serve	20	1 cup
Pudding, chocolate, home recipe	20	1 cup
Tapioca cream	20	1 cup
MEAT AND MEAT ALTERNATES:		
Kidney, beef	240	3 ounces
Liver, hog	220	3 ounces
Liver, beef or calf	210	3 ounces
Almonds, whole	80	1 cup
Fish loaf	60	$4\frac{1}{8}$ x $2\frac{1}{2}$ x 1-inch slice
Heart, beef, sliced	60	3 ounces
Almonds, sliced	50	1 cup
Liver, chicken	40	1 ounce
Beef, dried, chipped, creamed	30	1 cup
Welsh rarebit	30	1 cup
Lamb, leg or shoulder, chopped, lean	25	1 cup
Pork, fresh, ham or loin, chopped, lean	25	1 cup
Veal, stewed or roasted, chopped	25	1 cup
Braunschweiger	25	1 ounce
Chicken a la king, home recipe	25	1 cup
Macaroni (enriched) and cheese, home recipe	25	1 cup
Beef, chuck or rump, chopped, lean	20	1 cup
Lamb, leg or shoulder, chopped, lean and fat	20	1 cup
Pork, cured, ham or shoulder, chopped, lean	20	1 cup
Pork, fresh, shoulder, chopped	20	1 cup
Pork, fresh, ham or shoulder, ground, lean	20	1 cup
Veal, loin, chopped	20	1 cup
Veal, rib, ground	20	1 cup
Turkey, dark meat, chopped	20	1 cup
Chicken or turkey potpie, home-prepared from enriched flour	30	$\frac{1}{3}$ of 9-inch pie
Chop suey with beef and pork, home recipe	20	1 cup
Pepper, stuffed	20	1 pepper (6.5 ounces)
Spaghetti (enriched) with meatballs, home recipe	20	1 cup
VEGETABLES AND FRUIT:		
Broccoli, cooked	20	Medium stalk
Broccoli, cut, cooked	20	1 cup
Corn pudding	20	1 cup
Collards, cooked	20	1 cup
Turnip greens, cooked	20	1 cup
Avocado, Florida, raw	20	$\frac{1}{2}$ fruit
Avocado, Florida or California, raw, cubed	20	1 cup
CEREAL AND BAKERY PRODUCTS:		
Cereals, ready-to-eat (check label)	25	1 ounce
Spoonbread	25	1 cup
Hoagie roll, enriched	20	1 $1\frac{1}{2}$-inch-long roll

(Continued on page 546)

NIACIN

Food	Percentage of U.S. RDA	Amount of food
MISCELLANEOUS:		
Bread pudding, with enriched bread	35	1 cup
Oyster stew, home recipe	25	1 cup
Rice pudding	20	1 cup
Soup, cream of mushroom, with milk	20	1 cup
MEAT AND MEAT ALTERNATES:		
Peanuts	120	1 cup
Liver, hog	100	3 ounces
Chicken, light meat, chopped	80	1 cup
Turkey, light meat, chopped	80	1 cup
Liver, calf or beef	70	3 ounces
Chicken, breast	60	½ breast (3.3 ounces)
Chicken, stewed, dark meat, chopped	60	1 cup
Veal rib, chopped	60	1 cup
Tuna, canned in water	60	3 ounces
Chicken, roasted, light meat, sliced	50	3 ounces
Turkey, canned	50	1 cup
Rabbit, domesticated	50	3 ounces
Tuna, canned in oil, drained	50	3 ounces
Tuna salad	50	1 cup
Lamb, leg, chopped, lean	45	1 cup
Kidney, beef	45	3 ounces
Pork, loin, chopped, lean	45	1 cup
Veal, stewed, chopped	45	1 cup
Veal, rib, ground	45	1 cup
Chicken, canned	45	1 cup
Chicken, stewed, light meat, sliced	45	3 ounces
Turkey, light meat, sliced	45	3 ounces
Swordfish, broiled	45	3 ounces
Chicken, broiled	40	3 ounces
Goose	40	3 ounces
Lamb, shoulder, chopped, lean	40	1 cup
Pork, fresh, ham, chopped, lean	40	1 cup
Veal, loin, chopped	40	1 cup
Turkey potpie, home-prepared from enriched flour	40	⅓ of 9-inch pie
Salmon steak, broiled or baked	40	3 ounces
Sunflower seeds	40	1 cup
Beef, rump, chopped, lean	35	1 cup
Pork, fresh or cured, shoulder, chopped, lean	35	1 cup
Veal, rib, sliced	35	3 ounces
Heart, beef, sliced	35	3 ounces
Chicken, stewed, dark meat, sliced	35	3 ounces
Chicken, roasted, dark meat, chopped	35	1 cup
Halibut, broiled	35	3 ounces
Mackerel, broiled	35	3 ounces
Rockfish, oven-steamed	35	3 ounces
Shad, baked	35	3 ounces
Beef, chuck, chopped	30	1 cup
Beef, rump, ground, lean	30	1 cup
Pork, cured, ham, chopped, lean	30	1 cup
Pork, cured, shoulder, ground, lean	30	1 cup
Pork, loin, sliced, lean	30	3 ounces
Chicken fricassee, home recipe	30	1 cup
Turkey, dark meat, chopped	30	1 cup
Salmon, pink, canned	30	3 ounces
Beef potpie, home-prepared from enriched flour	30	⅓ of 9inch pie
Beef, chuck, ground, lean	25	1 cup
Beef, steak (club, porterhouse, T-bone, or sirloin), lean	25	3 ounces
Beef, steak (round)	25	3 ounces
Ground beef	25	3 ounces
Lamb, leg, sliced	25	3 ounces
Lamb, loin chop, lean and fat	25	3.5 ounces
Lamb, shoulder, sliced, lean	25	3 ounces
Pork, cured, ham, ground, lean	25	3 ounces
Pork, fresh, ham, sliced, lean	25	3 ounces

Pork, loin chop, lean and fat	25	2.7 ounces
Pork, loin, sliced, lean and fat	25	3 ounces
Veal, stewed, sliced	25	3 ounces
Veal, loin or cutlet	25	3 ounces
Chicken, roasted, dark meat; sliced	25	3 ounces
Chicken a la king, home recipe	25	1 cup
Chicken potpie, home-prepared from enriched flour	25	1/3 of 9-inch pie
Salmon, red, canned	25	3 ounces
Salmon rice loaf	25	6-ounce piece
Sardines, canned, drained	25	3 ounces
Beef and vegetable stew, home recipe	25	1 cup
Chop suey, with beef and pork, home recipe	25	1 cup
Corned beef hash, canned	25	1 cup
Peppers, stuffed	25	1 pepper (6.5 ounces)
Spaghetti (enriched) with cheese, canned	25	1 cup
Beef, chuck, sliced	20	3 ounces
Beef, rump, sliced	20	3 ounces
Beef, rib, sliced, lean and fat	20	3 ounces
Beef, flank steak	20	3 ounces
Beef, plate, lean	20	3 ounces
Beef, steak (club, porterhouse, T-bone, or sirloin), lean and fat	20	3 ounces
Lamb, rib chop, lean and fat	20	3.2 ounces
Lamb, loin chop, lean	20	2.3 ounces
Lamb, shoulder, sliced, lean and fat	20	3 ounces
Pork, cured, ham, sliced, lean	20	3 ounces
Pork, fresh, ham, sliced, lean and fat	20	3 ounces
Pork, fresh or cured, shoulder, sliced	20	3 ounces
Pork, loin chop, lean	20	2 ounces
Chicken, thigh	20	2.3-ounce piece
Turkey, dark meat, sliced	20	3 ounces
Chicken and noodles, home recipe	20	1 cup
Chow mein, home recipe	20	1 cup
Spaghetti (enriched) with meatballs, home recipe	20	1 cup
Lobster salad	20	A salad
Lobster Newburg	20	1 cup
Crab, deviled	20	1 cup
VEGETABLES AND FRUITS:		
Dates, pitted, chopped	20	1 cup
Peaches, dried, cooked, unsweetened	20	1 cup
Peas, green, cooked	20	1 cup
CEREAL AND BAKERY PRODUCTS:		
Hoagie roll, enriched	25	11½-inch-long roll
Cereals, ready-to-eat (check label)	20	1 ounce

CALCIUM

Food	*Percentage of U.S. RDA*	*Amount of food*
MILK AND MILK PRODUCTS:		
Cheese, Parmesan, grated	40	1 ounce
Milk, partially skimmed	35	1 cup
Pudding, uncooked, from mix	35	1 cup
Milk, whole or skim	30	1 cup
Milk, nonfat dry, reconstituted	30	1 cup
Buttermilk	30	1 cup
Chocolate drink, made from whole milk	30	1 cup
Cocoa	30	1 cup
Malted beverage	30	1 cup
Custard, baked	30	1 cup
Pudding, vanilla, home recipe	30	1 cup
Rennin desserts	30	1 cup
Yogurt, made from partially skimmed milk	30	1 cup
Chocolate drink, made from skim milk	25	1 cup
Cheese, cottage, creamed	25	1 cup

(Continued on page 548)

APPENDIX H (Continued)

Food	Percentage of U.S. RDA	Amount of food
Cheese, Swiss	25	1 ounce
Yogurt, made from whole milk	25	1 cup
Ice cream or ice milk, soft-serve	25	1 cup
Pudding, cooked, from mix, with milk	25	1 cup
Pudding, chocolate, home recipe	25	1 cup
Cheese, American, process	20	1 ounce
Cheese, Cheddar, natural	20	1 ounce
Cheese, cottage, uncreamed	20	1 cup
Ice cream or ice milk, hardened	20	1 cup
MEAT AND MEAT ALTERNATES:		
Welsh rarebit	60	1 cup
Sardines, canned, drained	35	3 ounces
Macaroni (enriched) and cheese, home recipe	35	1 cup
Potatoes au gratin	30	1 cup
Beef, dried, chipped, creamed	25	1 cup
Cheese souffle	20	1 cup
Lobster Newburg	20	1 cup
Macaroni (enriched) and cheese, canned	20	1 cup
VEGETABLES AND FRUIT:		
Collards, cooked	35	1 cup
Cabbage, spoon, cooked	25	1 cup
Spinach, canned	25	1 cup
Turnip greens	25	1 cup
Kale, cooked	20	1 cup
Mustard greens, cooked	20	1 cup
Rhubarb, cooked	20	1 cup
CEREAL AND BAKERY PRODUCTS:		
Spoonbread	25	1 cup
Farina, enriched, instant	20	1 cup
MISCELLANEOUS:		
Bread pudding	30	1 cup
Oyster stew, home recipe	30	1 cup
Rice pudding	25	1 cup
Soup, with milk:		
Green pea	20	1 cup
Cream of celery	20	1 cup
Cream of mushroom	20	1 cup
Cream of asparagus	20	1 cup

IRON

Food	Percentage of U.S. RDA	Amount of food
MEAT AND MEAT ALTERNATES:		
Liver, hog	140	3 ounces
Pumpkin kernels	90	1 cup
Liver, calf	70	3 ounces
Kidney, beef	60	3 ounces
Sunflower seeds	60	1 cup
Liver, beef	40	3 ounces
Walnuts, black, chopped	40	1 cup
Clams, canned, drained, chopped	35	1 cup
Beans, lima, dry, cooked	35	1 cup
Beans, with pork and sweet sauce, canned	35	1 cup
Almonds, whole, shelled	35	1 cup
Beef, chuck or rump, chopped, lean	30	1 cup
Pork, cured, shoulder, chopped, lean	30	1 cup
Pork, fresh, ham or loin, chopped, lean	30	1 cup
Heart, beef, sliced	30	3 ounces
Clams, raw	30	4 or 5 clams
Beef potpie, home-prepared from enriched flour	30	1/3 of 9-inch pie
Beans, navy (pea), dry, cooked	30	1 cup
Beans, white, dry, canned, solids and liquid	30	1 cup
Cashew nuts, whole kernels, roasted	30	1 cup
Beef, chuck or rump, ground lean	25	1 cup
Pork, cured, ham, chopped, lean	25	1 cup
Pork, fresh, shoulder, chopped	25	1 cup
Pork, fresh, ham, ground, lean	25	1 cup
Veal, chopped	25	1 cup
Chicken or turkey potpie, home-prepared from enriched flour	25	1/3 of 9-inch pie
Chile con carne with beans, canned	25	1 cup

Chop suey, with beef and pork, home recipe	25	1 cup
Corned beef hash, canned	25	1 cup
Beans, Great Northern or red kidney, dry, cooked	25	1 cup
Beans, red kidney, dry, canned, solids and liquid	25	1 cup
Lentils, dry, cooked	25	1 cup
Soybeans, dry, cooked	25	1 cup
Beans, with frankfurters, canned	25	1 cup
Beans, with pork and tomato sauce, canned	25	1 cup
Beef, chuck, sliced, lean	20	3 ounces
Beef, flank steak	20	3 ounces
Beef, plate, lean	20	3 ounces
Beef, steak, sirloin, lean	20	3 ounces
Pork, cured, ham or shoulder, ground, lean	20	1 cup
Pork, fresh, shoulder, ground, lean	20	1 cup
Pork, fresh, ham, sliced, lean	20	3 ounces
Pork, loin, sliced, lean	20	3 ounces
Turkey, dark meat, chopped	20	1 cup
Veal, rib, ground	20	1 cup
Peppers, stuffed	20	1 pepper (6.5 ounces)
Spaghetti (enriched) in tomato sauce, with meatballs; canned or home-prepared	20	1 cup
Cowpeas, dry, cooked	20	1 cup
Peas, split, dry, cooked	20	1 cup
Beef, chuck, lean and fat, sliced	15	3 ounces
Beef, corned	15	3 ounces
Beef, plate, lean and fat	15	3 ounces
Beef, rump, sliced	15	3 ounces
Beef, rib, sliced, lean	15	3 ounces
Beef, steak (round)	15	3 ounces
Beef, steak (club, porterhouse, or T-bone), lean	15	3 ounces
Beef, steak (sirloin), lean and fat	15	3 ounces
Ground beef	15	3 ounces
Lamb, shoulder, chopped, lean	15	1 cup
Lamb, leg, chopped	15	1 cup
Pork, cured, shoulder, sliced	15	3 ounces
Pork, cured, ham, sliced, lean	15	3 ounces
Pork, fresh, loin or ham, sliced, lean and fat	15	3 ounces
Pork, loin chop, lean and fat	15	2.7 ounces
Pork, fresh, shoulder, sliced	15	3 ounces
Veal, sliced	15	3 ounces
Veal, cutlet or loin	15	3 ounces
Beef and vegetable stew, home recipe	15	1 cup
Chicken, dark meat, chopped	15	1 cup
Chicken, canned	15	1 cup
Spaghetti (enriched) with tomato sauce and cheese, canned	15	1 cup
Turkey, canned	15	1 cup
Chow mein, chicken, home recipe	15	1 cup
Chicken a la king, home recipe	15	1 cup
Crab, deviled	15	1 cup
Sardines, canned	15	3 ounces
Shrimp, canned	15	3 ounces
Lobster salad	15	A salad
Tuna salad	15	1 cup

VEGETABLES AND FRUIT:

Peaches, dried, uncooked	60	1 cup
Prune juice, canned	60	1 cup
Dates, pitted, chopped	30	1 cup
Raisins, seedless	30	1 cup
Spinach, canned	30	1 cup
Asparagus, pieces, canned	25	1 cup
Beans, lima, canned	25	1 cup
Beans, lima, fresh or frozen, baby, cooked	25	1 cup
Apricots, dried, cooked	25	1 cup
Peaches, dried, cooked	25	1 cup
Cowpeas, cooked	20	1 cup
Cowpeas, canned, solids and liquid	20	1 cup
Peas, green, canned	20	1 cup
Spinach, cooked	20	1 cup
Turnip greens, canned, solids and liquid	20	1 cup
Prunes, dried, cooked	20	1 cup

(Continued on page 550)

APPENDIX H (Continued)

Beans, lima, Fordhook, cooked	15	1 cup
Beet greens, cooked	15	1 cup
Chard, Swiss, cooked	15	1 cup
Mustard greens, fresh or frozen, cooked	15	1 cup
Peas, green, cooked	15	1 cup
Sauerkraut juice	15	1 cup
Vegetables, mixed, cooked	15	1 cup
Boysenberries, canned	15	1 cup
Plums, canned, water or sirup pack	15	1 cup
Prunes, dried, uncooked	15	10 prunes

CEREAL AND BAKERY PRODUCTS:

Farina, instant, enriched, cooked	90	1 cup
Farina, regular and quick-cooking, enriched, cooked	70	1 cup
Hoagie roll, enriched	40	11½-inch-long roll
Cereals, ready-to-eat (check label)	20	1 ounce
Cottage pudding with enriched flour and chocolate sauce	20	⅙ of 8-inch-square cake
Gingerbread, with enriched flour	20	⅑ of 9-inch-square cake
Pie, pecan	20	4¾-inch sector
Coffeecake, with enriched flour	15	2.5-ounce piece
Cottage pudding, with enriched flour and strawberry sauce	15	⅙ of 8-inch-square cake
Hard roll, enriched	15	1 roll (1.8 ounces)
Spoonbread	15	1 cup

MISCELLANEOUS:

Bread pudding, with raisins and enriched bread	20	1 cup
Oyster stew, home recipe	20	1 cup
Molasses, blackstrap	20	1 tablespoon
Apple brown betty, with enriched bread	15	1 cup
Sirup, sorghum	15	1 tablespoon

APPENDIX I

Common Food Preparation Terms

barbecue—roast or broil on a rack or revolving spit; food is usually basted frequently with a spicy sauce.

baste—to brush or pour liquid over food to moisten it during cooking.

beat—to mix ingredients thoroughly with a mixing spoon or wire whisk; mixture is lifted up and over until it is smooth; can also use a rotary beater or electric mixer.

blanch—to put food in boiling water for a short time, either to make it easier to peel or to prepare it for freezing.

blend—to mix two or more ingredients thoroughly, such as shortening and sugar in cake batter.

bread—to coat surface of food, usually with fine bread, cracker, or cereal crumbs.

brochette—large metal skewer for holding small pieces of food while they broil or grill.

brush—to spread liquid over food with a brush, such as beaten egg or melted butter or margarine.

chop—to cut into small pieces with a knife or food chopper.

clarify—to make clear by separating solids from liquids and removing them, such as clarifying butter.

coat—to cover surface of one food evenly with another food such as flour, crumbs, sugar.

cream—to beat with a spoon or electric mixer until soft, smooth, and creamy.

cube—cut into small squares, such as bread cubes.

cut in—to distribute solid shortening through dry ingredients, usually flour, by using a pastry blender, two knives, or a fork.

de-glaze—to loosen drippings and food particles cooked on a utensil by adding liquid slowly; used to make gravies, sauces.

dice—to cut into small cubes, about 0.6 cm (¼-inch) square.

fold in—to combine two mixtures, such as batter and beaten egg whites, by gently cutting down through mixture, turning over, and repeating until well mixed.

grate—to make small particles by rubbing food on a grater.

grease—to coat a cooking utensil with a thin layer of non-salt shortening before filling with food. Salted fat causes food to stick and overbrown.

grind—to put food through a food chopper.

julienne—to cut food into narrow, lengthwise strips, such as ham and turkey for a chef's salad.

reconstitute—to restore concentrated food, such as orange juice, to its original state by adding water.

rehydrate—to soak or cook dried food to restore the water lost in drying.

score—to make narrow cuts through the outer surface of food.

sear—to brown surface of meat in high heat, either on top of range or in oven.

shred—to grate coarsely, or to cut or tear into long, narrow pieces.

sift—to put a dry ingredient through a fine sieve or flour sifter.

skewer—metal pin, usually aluminum, in different lengths; used to close cavity opening of whole poultry, or to hold meat and vegetables for broiling or grilling.

(Continued on page 552)

skim—to remove top surface layer of undesirable ingredients, such as fat from soup or gravy.

stir—to mix gently with a spoon in a circular motion.

toast—to brown by direct heat in a toaster or oven.

toss—to tumble ingredients lightly with a spoon and fork.

whip—to beat rapidly to incorporate air and increase volume, usually with a rotary beater or electric mixer.

Appendix J

Customary Abbreviations and Equivalents

Abbreviations

teaspoon	tsp.	quart	qt.
tablespoon	Tbsp.	gallon	gal.
cup	c.	ounce	oz.
pint	p.	pound	lb.

Equivalents

1 tablespoon	3 teaspoons	$\frac{2}{3}$ cup	$10\frac{2}{3}$ tablespoons
	$\frac{1}{2}$ fluid ounce	$\frac{3}{4}$ cup	12 tablespoons
1 fluid ounce	2 tablespoons	1 cup	16 tablespoons
	$\frac{1}{8}$ cup		8 fluid ounces
1 pound	16 ounces	1 pint	2 cups
	2 liquid cups	1 quart	2 pints
$\frac{1}{4}$ cup	4 tablespoons	1 gallon	4 quarts
$\frac{1}{3}$ cup	$5\frac{1}{3}$ tablespoons	1 peck	8 quarts
$\frac{1}{2}$ cup	8 tablespoons	1 bushel	4 pecks

Selected Additional Reading

Part I—Nutrition for Good Health

Books

Arlin, Marian Thompson. *The Science of Nutrition.* New York, N.Y.: The Macmillan Co., 1972.

Berland, Theodore and editors of *Consumer Guide. Rating the Diets.* Skokie, Ill.: Publications International, Ltd., 1974.

Bogert, Jean L.; Briggs, George M.; and Calloway, Doris Howes. *Nutrition and Physical Fitness.* Philadelphia, Pa.: W. B. Saunders Co., 1973.

Borgstrom, Georg. *Hungry Planet.* New York, N.Y.: The Macmillan Co., 1972.

Brown, Lester R. *Seeds of Change.* New York, N.Y.: Praeger Publishers, Inc., 1970.

Brown, Lester and Eckholm, Erik P. *By Bread Alone.* New York, N.Y.: Praeger Publishers, Inc., 1974.

Diehl, Harold S. and Dalrymple, Willard. *Healthful Living.* New York, N.Y.: McGraw-Hill, Inc., 1973.

Eckstein, Gustav. *The Body Has a Head.* New York, N.Y.: Harper and Row, 1970.

Fleck, Henrietta. *Introduction to Nutrition.* New York, N.Y.: The Macmillan Co., 1971.

Lowenberg, Miriam E.; Todhunter, E. Neige; Wilson, Eva D.; Savage, Jane R.; and Lubawski, James L. *Food and Man.* New York, N.Y.: John Wiley & Sons, Inc., 1974.

McWilliams, Margaret and Davis, Linda. *Food for You.* Boston, Mass.: Ginn and Co., 1971.

Margolis, Sidney. *Health Foods, Facts, and Fakes.* New York, N.Y.: Walker and Co., 1973.

Martin, Ethel Austin. *Nutrition in Action.* New York, N.Y.: Holt, Rinehart and Winston, Inc., 1971.

Mooneyham, W. Stanley. *What Do You Say to a Hungry World?* Waco, Texas: Word Books, 1975.

Nourse, Alan E. (Life Science Library). *The Body.* New York, N.Y.: Time-Life, Inc., 1970.

Schifferes, Justus J. and Peterson, Louis J. *Essentials of Healthier Living.* New York, N.Y.: John Wiley & Sons, Inc., 1972.

Tannahill, Reay. *Food in History.* New York, N.Y.: Stein and Day, 1973.

White, Philip L. and Selvey, Nancy. *Let's Talk about Food.* Acton, Mass.: Publishing Sciences Group, Inc., 1974.

Periodicals

American Journal of Public Health
Family Health
Journal of Home Economics
Journal of Nutrition Education
National Geographic
Nutrition Today
Science News

Part II—Consumer Decisions

Books

Bratton, Esther Crew. *Home Management Is. . .* Boston, Mass.: Ginn and Co., 1975.

Fetterman, Elsie and Jordan, Ruth. *Consumer Credit.* Peoria, Ill.: Chas. A. Bennett Co., Inc., 1976.

Jelley, Herbert M. and Herrmann, Robert O. *The American Consumer.* New York, N.Y.: McGraw-Hill Co., 1973.

Rainey, Jean. *How To Shop for Food.* New York, N.Y.: Barnes and Noble, Inc., 1972.

Schoenfeld, David and Natella, Arthur A. *The Consumer and His Dollars.* Dobbs Ferry, N.Y.: Oceana Publications, Inc., 1975.

Reader's Digest Complete Do-It-Yourself Manual. Pleasantville, N.Y.: The Reader's Digest Assoc., 1973.

U.S. Department of Agriculture. *Shopper's Guide, The 1974 Yearbook of Agriculture.*

Washington, D.C.: Superintendent of Documents, 1974.

Periodicals

Better Homes and Gardens Magazine
Changing Times
Consumer Reports
Family Circle
Good Housekeeping
Woman's Day

Part III—Food Preparation and Service

Books

Lewis, Dora S.; Peckham, Gladys C.; and Hovey, Helen S. *Family Meals and Hospitality.* New York, N.Y.: The Macmillan Co., 1972.

McDermott, Irene E.; Trilling, Mabel B.; and Nicholas, Florence W. *Food for Modern Living.* Philadelphia, Pa.: J. B. Lippincott Co., 1973.

Nichols, H. L., Jr. *Cooking with Understanding.* Greenwich, Conn.: North Castle Books, 1971.

Peck, Leilani B.; Moragne, Lenora; Sickler, Mary Suzanne; and Washington, Ethel O. *Focus on Food.* New York, N.Y.: McGraw-Hill Co., 1974.

Post, Elizabeth L. *The New Emily Post's Etiquette.* New York, N.Y.: Funk & Wagnalls, 1975.

Rombauer, Irma S. and Becker, Marion R. *Joy of Cooking.* Indianapolis, Ind.: Bobbs-Merrill Co., Inc., 1975.

White, Ruth Bennett. *Food and Your Future.* Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1972.

Better Homes and Gardens New Cook Book. Des Moines, Iowa: Meredith Corp., 1976.

Ebony Cook Book. Chicago, Ill.: Johnson Publishing Co., 1975.

Good Housekeeping New Basic Cookery. New York, N.Y.: International Publications Service, 1970.

Periodicals

Better Homes and Gardens Magazine
Co-ed
Family Circle
Family Safety
Good Housekeeping Magazine
Woman's Day

Part IV—Creative Cooking

Books

Anderson, Jean and Hanna, Elaine. *Doubleday Cookbook.* New York, N.Y.: Doubleday and Co., Inc., 1975.

Child, Julia. *From Julia Child's Kitchen.* New York, N.Y.: Alfred A. Knopf, 1975.

Claibourne, Craig. *The N. Y. Times Cook Book.* New York, N.Y.: Harper and Row, 1975.

Editors of Sunset Books. *The Barbecue Cook Book.* Menlo Park, Cal.: Lane Books, 1972.

Tannahill, Reay. *Food in History.* New York, N.Y.: Stein and Day, 1973.

Terrell, John Upton. *American Indian Almanac.* New York, N.Y.: The World Publishing Co., 1971.

Better Homes and Gardens Heritage Cook Book. Des Moines, Iowa: Meredith Corp., 1975.

Foods of the World Series. New York, N.Y.: Time-Life Books, 1968.

Periodicals

Better Homes and Gardens Magazine
Family Circle
Good Housekeeping Magazine
Gourmet
McCall's
Sunset Magazine
Woman's Day

Part V—Careers

Books

Cornelius, Ethelwyn G. *Food Service Careers.* Peoria, Ill.: Chas. A. Bennett Co., Inc., 1974.

Feingold, S. Norman and Swerdloff, Sol. *Occupations and Careers.* New York, N.Y.: McGraw-Hill Co., 1969.

Hoeflin, Ruth. *Careers in Home Economics.* New York, N.Y.: The Macmillan Co., 1970.

Karlin, Muriel S. *Solving Your Career Mystery.* New York, N.Y.: Richards Rosen Press, Inc., 1975.

Ray, Mary F., and Lewis, Evelyn J. *Exploring Professional Cooking.* Peoria, Ill.: Chas. A. Bennett Co., Inc., 1976.

Periodicals

Career World
Co-ed

Index

A

Abbreviations, customary (Appendix J), 553
Accidents, 279, 280
Acid, effect on cooked vegetables, 340
Acidity control, 30
Acidosis, 80
Additives, 29–31, 88
Adenosine triphosphate, 54
Adult food needs, 149
Advancement in career, 474–476
Adventure (basic human need), 15
Advertising
  by food quacks, 36
  by stores, 177
  effect on food choices, 26, 27
Aerophagia, 56
Aerosol sprays, 284
Aesthetic appreciation (basic human need), 15
Africa, food customs, 427–429
Aging meat, 206, 207
Air, as leavening, 314
Al dente, 330
Alcohol, effect on nutrition, 56
Alkalies, effect on cooked vegetables, 340
All-purpose flour, 202
Aluminum foil pans, how to make, 407
Aluminum utensils, 268
American Dietetics Association, 477
American Gas Association, 253
American Home Economics Association, 477
American Indians, food customs, 437–439
American Vocational Association, 477
Amino acids
  cell-building, 51–53
  description, 59, 82, 83
  digestion, 48, 50
  food sources, 83, 102, 103
  storage in body, 51, 85, 86
  vegetarian diets, 85
Ampere, 247
Amphetamines, 136–138
Analog, 83
Anemia, 49, 96
Annual percentage rate, 253
Antiperistalsis, 55
Antipasto, 424
Apple-Cheddar Fondue, 310
Apple Pie, 444
Appliance problems, 253, 254
Appliances, used, 266, 267
Application form, 492, 493
Apricot kernels, 36
Arable land, 165, 166
Artificial sweeteners, 221
Asbestos mitts, 456
Ascorbic acid. *See Vitamin C*
Ascorbic acid, on cut fruit, 334
Atherosclerosis, 81
Athletes' food needs, 143, 144
Atmosphere, mealtime, 386
ATP, 54
Automatic defrost, 255

B

B-complex vitamins, 89
Baby beef, 208
Baby food, 149
Backpacking, 463
Bacon, 214
Bacteria
  cause of food-borne illnesses, 274, 275, 383, 384
  cause of food spoilage, 223, 224, 383, 384
Baked desserts, storing, 233
Baked goods
  buying guidelines, 205
  storing, 234
Baking
  cakes, 316–319
  cookies, 319, 320
  fish, 357
  general instructions, 296, 313–316
  pastry, 320–323
  quick breads, 323, 324
  yeast bread, 324–329
Baking pans, 267
Baking, principles of, 313–316
Baklava, 23
Balanced meal, 100
Barbecued beef, 449
Barbecues. *See Outdoor cooking*
Bar cookies, 319
Basal metabolic rate. *See BMR*
Basal metabolism, 62, 63
Base of salad, 343
Basic flavors, sense of taste, 25
Basic Four Food Groups. *See Daily Food Guide*
Basic human needs, 13–15
Basic kitchen plans, 239–242
Baster, 458
Batters, 314
Beans
  buying guidelines, 200
  storing, 231
Beaters, 269
Beating egg whites, 361–363
Beef, 208, 209
Beef Wellington, 402
Behavior on the job, 493–497
Berbere, 429
Beriberi, 89, 90
Beverages, 390–395
Binding agent, 364
Biotin, 91
Bird's nest soup, 431
Biscuit method, 324
Black beans, 200
Black-eyed peas, 200
Blackstrap molasses, 35

Blanch, 369
Blends (herb), 409, 410
Blintzes, 424
Blood, as food, 19, 23, 428
Blood cells, 49
Blood, in human body, 49–51
Blood sugar, 153
Blown fuse, 247
BMR, 62, 63
Body, human
  changes in nutrient needs, 65–67
  digestion, 44–49
  need for nutrients, 60, 64
  need for oxygen, 61, 63
  need for water, 60
  processes, 39, 40–55, 82
  structure, 39, 40
  temperature, 54, 60
Body of salad, 343
Boil, general instructions, 294
Bomb calorimeter, 61
Bombe, 308
Bone china, 378
Bone marrow, 51
Bone structure, 39, 40
Borsch, 424
Boston baked beans, 440–441
Bottles, exploding, 284, 285
Botulism
  food-borne illness, 34, 274
  in home-canned foods, 371, 372
Bouillabaisse, 419
Bowel movement, 48
Braaivleis, 429
Brain development, 147, 148
Brain, human, 53
Braise
  general instructions, 295
  meat, 350, 353
  poultry, 356
Bran, 89
Brazier grill, 455
Breads and Cereals Group
  buying guidelines, 201–205
  description, 103, 104
  preparing, 313–330
  storing, 233, 234
Bread, storing, 233
Breakfast, planning, 115–117
Breast-feeding, 148, 149
Brine, 374
Briquets, charcoal, 457
Broil
  fish, 357
  frozen meat, 354
  general instructions, 297
  meat, 352, 353
  poultry, 354, 355
Broken bone, healing, 53
Brown-and-serve baked goods, 205
Brownouts, 287
Brown rice, 204
Brown-shelled eggs, 34, 218
Brown soup stock, 364
Brown sugar, 220
Brunswick stew, 443
Brush, barbecue, 456
Brush for grid, 456
Bubble and squeak, 417
Buckwheat flour, 202
Buddhism, 19, 146
Budget for food, 175
Buffet style service, 384, 385
Building a fire
  campfire, 459–463
  in an outdoor grill, 457–459
Building blocks, 82
Building cells, 51–53
Built-in dishwasher, 262
Built-in range, 258
Bulgur, 204, 427
Burns, 280, 281
Business, home economics careers in, 480
Butter
  buying guidelines, 220
  storing, 234
Butterfat, 189
Buttermilk, 190
Butters, fruit, 375
Buying clubs, 175
Buying guidelines
  baked goods, 205
  baking utensils, 267–269
  beef, 208, 209
  breads and cereals, 201–205
  canned fruits, 198
  canned vegetables, 199
  cheese, 191–194
  cooking utensils, 267–269
  cream, 190
  credit, 253
  dinnerware, 377, 378
  dishwasher, 262, 263
  dried fruits, 199, 200
  dried vegetables, 200, 201
  eggs, 218–220
  fats, 220
  fish, 215, 216
  flatware, 379, 380
  flour, 202, 203
  food, 109, 110
  food waste disposer, 263, 264
  freezer, 256
  fresh fruits, 195–197
  fresh vegetables, 197, 198
  frozen desserts, 194, 195
  frozen food, 199
  glassware, 378, 379
  legumes, 200, 201
  meat, 205–214
  milk, 189, 190
  oils, 220
  outdoor grills, 455, 456
  pasta, 203
  portable electric appliances, 264, 265
  poultry, 217, 218
  range, 258–262
  refrigerator-freezer, 254–258
  rice, 204
  shellfish, 215–217
  sweeteners, 220
  table linens, 381
  tableware, 377
  trash compactor, 264
  used appliances, 266, 267

C

Cabbage soup (Russian), 424
Caesar Salad, 403, 405
Café au lait, 392
Caffé espresso, 392
Cake decorating tool, 412, 413

Cake flour, 202
Cakes
baking, 316–319
storing, 233
Calciferol. *See Vitamin D*
Calcium
description, 93, 94
healing broken bones, 53
Calcium propionate, 30
Calisthenics, 42
Calorie, 61
Calories in food, 132, 133
Campfire cooking, 459–465
Canadian style bacon, 214
Candy, 414, 415
Canned
fish, 365
foods, commercial, 185
fruits, 198, 199
meats, 365
poultry, 365
soups, 365
using, 335, 341, 342
vegetables, 199
Canning fresh fruits and vegetables, 367–374
Capillaries, 50
Carbohydrates
calories in, 62
change during storage, 231
deficiency, 79
description, 59, 78, 79
digestion process, 48
food sources, 79
functions, 59, 77
in diabetic diets, 153
overuse, 79
satiety value, 46
Cardiovascular system, 39, 49–51
Career information, sources, 476, 477, 480
Career ladder, 469, 470
Career selection, 469–472
Careers in
food service, 472–476
home economics, 476–483
Care of
dinnerware, 378
dishwasher, 263
flatware, 380
food waste disposer, 263, 264
glassware, 378, 379
portable electric appliances, 266
range, 262
refrigerator-freezer, 256
trash compactor, 264
Caribbean Islands, food customs, 434, 435
Caries, 79
Carotene, 86, 340
Carpeting, kitchen, 245
Casseroles, 267
Cassoulet, 418
Cast iron utensils, 268
Caste system, 19
Casual china, 378
Catherine the Great, 424
Cells, human, 49–53
Celsius, 498
Centi-, 498
Ceramic tile, 245
Cereals
buying guidelines, 204
storing, 233
Chanukah, 19
Charcoal briquets, 457
Charts
Anatomy of a Food Label (Appendix F), 503
Application for Employment, 494, 495
Arable Land in the World, 166
Bones Identify Seven Basic Cuts, 207
Calories Used for Activities, 126
Career Ladder, 470
Common Food Preparation Terms (Appendix I), 551
Customary Abbreviations and Equivalents (Appendix J), 553
Daily Food Guide Divided into Seven Groups, 105
Fish Can Be Bought in Many Forms, 216
Food-Borne Illnesses—Cause and Prevention, 274
How Food is Digested, 48
Important Food Sources of Nutrients (Appendix H), 541
Know Your Nutrients, 72–75
Materials for Utensils, 268
Menu for Dinner, 304
Metric Equivalents, 498
Mixtures Classified into Food Groups, 106
Nutrients in Food (Appendix G), 504
Nutrition Label (Appendix E), 502
1,200 Calorie Diet, 130
Percentages of U.S. RDA (Appendix D), 501
Popular American-made Cheeses, 192, 193
RDA (Recommended Daily Dietary Allowances) (Appendix B), 498
Retail Cuts of Beef, 210
Retail Cuts of Lamb, 212
Retail Cuts of Pork, 211
Retail Cuts of Veal, 213
Sample Letter of Application for a Job, 487
Sample Resume, 488
Sample Worksheet, 108
Seven Basic Wholesale Cuts of Meat, 208
Temperature Guide to Food Safety, 277
Timetable for Dinner, 304
U.S. RDA (Appendix C), 500
Weight Table for Adults, 125
Work Schedule for Dinner, 305
Cheese
buying guidelines, 191–194
cooking, 309, 310
freezing, 230
in Italy, 424
serving, 309
storing, 230
Cheese fondue, 27, 310

Cheese Soufflé, 362
Chemical leavening, 314
Cheyenne, 438
Chewing food, 45, 46
Chicken
buying guidelines, 217, 218
cooking, 354–356
storing, 233
Chickpeas. *See Garbanzo*
Chiffon cake method, 316
Chiffon cakes, 316
Chiffon pie, 323
Child nutrition programs, 70
Children's eating habits, 24
Chili con carne, 449
China, 378
China, food customs, 431, 433
Chitterlings, 446
Chlorine, 95, 96
Chlorophyll, 340
Chocolate-flavored milk, 190
Chocolate-flavored milk drink, 190
Choctaw Indians, 444
Cholesterol, 81, 154, 155
Chopsticks, 387, 431
Chowders, 441
Christianity, 20
Chutney, 417
Chyme, 45
Circuit, 247
Circulatory system, 39, 49–51
Clambake, 440
Clams, 217
Cleaning up
after campfire cookout, 463–465
after meal, 384
after party, 389
during food preparation, 301, 302
Cleanliness, storage area, 224, 225
Climate, effect on food customs, 16, 17
Climate, variations in, 162
Cloudiness, in home-canned food, 374
Cobalamin. *See Vitamin* B_{12}
Cobbler, 323
Coffee, 392, 394
Coffee makers, 392
Collagen, 92
Cold pack method. *See Raw pack method*
Colds and vitamin C, 92
Colon. *See Large intestine*
Color of food
meal planning, 113
nutrients, 197
Coloring, as additive, 30
Colostrum, 148
Communications, home economics career in, 480
Complete proteins, 83
Coney Islands, 390
Confectioner's sugar, 221
Connective tissue, 206
Conserves, 375
Conserving energy. *See Energy conservation*
Conserving nutrients, 290
Consumer affairs, careers in, 479, 480
Consumer aids, 177–179
Consumer responsibilities, 182–184
Containers
dry storage, 224, 225
for food gifts, 414
for freezing, 227, 368
for home canning, 370, 371
for refrigerated food, 225, 226
reusing, 225
Contaminants, 31–34
Continental system of eating, 387
Continuous-cleaning range, 259
Controlling
additives, 30, 31
contaminants, 33, 34
Convection oven, 261
Convenience foods
breads, 330, 331
cost of, 174
dairy products, 310
fish, 365
fruit, 335
in creative cooking, 399, 401
in France, 418
in Russia, 424
meat, 365
poultry, 365
regional specialties, 451, 453
salad dressings, 345, 346
salads, 345, 346
vegetables, 341, 342
Convenience stores, 175
Conventional mixing method
cakes, 316
yeast breads, 327
Converted rice, 204
Cooked dressing, 343, 344
Cookies
baking, 319, 320
storing, 233
Cooking
beverages, 390–395
cheese, 309, 310
eggs, 358–364
fish, 356–358, 465
fruit, 334, 335
gourmet, 401, 402
home-canned food, 374
meat, 349–354
methods, 294–298
milk, 307, 308
on outdoor grill, 457–459
over a campfire, 459–465
poultry, 354–356
shellfish, 356, 357
soup, 364, 365
vegetables, 337–342
with herbs and spices, 406–411
Cooking methods, 294–298
Cooking spoons, 269
Cooking utensils, 267–269
Co-ops, 175
Copper utensils, 268
Cornish Pasty, 417
Cornmeal, 205
Cornstarch, as thickening agent, 330
Corn syrup, 221
Corridor kitchen, 240
Costs of
buying food, 174, 175, 179, 181–183
preserving food at home, 367

Cottage cheese, 191
Council on Hotel, Restaurant, and Institutional Education, 476
Counter-model range, 259
Counter tops, 245
Coupons, 177
Couscous, 427
Cover, 382
Cow peas. *See Black-eyed peas*
Cowboy's meal, 449
Cowboy stew, 449
Crabs, 217
Cracked eggs, 233
Cracked wheat flour, 202
Cream
  buying guidelines, 190
  cooking, 308
  storing, 229
Cream cheese, 191
Cream pies, 323
Creative Casseroles, 401
Credit, 253
Creole cooking, 443–445
Crepes, 406
Crystal, 378
Crystalline candies, 414
CSM protein supplement, 158
Curdled milk, 307
Curdled egg mixtures, 361
Cured pork, 209
Curry powder, 430
Customer service jobs, 473
Customs, ethnic. *See Ethnic customs*
Cuts (accidents), 282–284
Cutting meat, 181
Czernina (Polish soup), 23

D

Daily Food Guide, 100–108
Decision making, 173, 174
Decorating cone, 412, 413
Decorating kitchen, 249
Decorations, table, 381
Deep-dish pie, 323
Deep-fat fry
  general instructions, 298
  fish, 357
Deficiency
  biotin, 91
  calcium, 93, 94, 147
  carbohydrates, 79
  chlorine, 95
  fats, 82
  folic acid, 91
  iodine, 96, 97
  iron, 96
  magnesium, 94, 95
  pantothenic acid, 91
  phosphorus, 94
  potassium, 95, 138
  protein, 84, 85, 147
  riboflavin, 90, 147
  sodium, 95
  thiamin, 89, 90
  vegetarian diets, 146, 147
  vitamin A, 87
  vitamin B_6, 91
  vitamin B_{12}, 91, 147
  vitamin C, 92
  vitamin D, 87, 147
  vitamin E, 88
  vitamin K, 88
  zinc, 97
Defrosting refrigerator, 256
Degree of doneness, 351
Delicatessens, 176
Dental cavities, 79
Dental problems, 45
Deoxyribonucleic acid. *See DNA*
Developed countries, 157, 159–161
Developing countries, 157, 159–161
Diabetes, 153
Diabetic diets, 153
Diet candies, 138
Diet clubs, 134
Diet hints, 135, 136
Diet pills, 136–138
Dietetics, as a career, 477, 478
Dieting, 129–138
Diets
  developed countries, 160, 161
  developing countries, 161
  diabetic, 153
  low-cholesterol, 154, 155
  low-sodium, 154
  weight control, 129–138
Digestibility, 46, 47
Digestion process, 43–49
Digestive tract, 44, 51
Dinner, planning, 120, 121
Dinnerware, 377, 378
Disaccharides. *See Double sugars*
Dishwasher, 262, 263
Disposer. *See Food waste disposer*
DNA, 52, 53
Doneness, test for. *See Test for doneness*
Double boiler, 308
Double sugars, 78, 79
Doughs, 314
Dried foods, 186
Dried fruits
  buying guidelines, 199, 200
  storing, 231
  using, 335
Dried vegetables
  buying guidelines, 200, 201
  storing, 231
  using, 342
Drip coffee, 392
Drop cookies, 319
Drugs, effect on nutrition, 56, 57
Dry heat cooking, general instructions, 296, 297
Dry ingredients, how to measure, 301
Dry milk
  buying guidelines, 190
  storing, 229, 230
  using, 310
Dry shelf storage, 224, 225
Ducks, 217, 218
Duodenum, 47
Durum wheat, 203

E

Earth, planet, 157
Earthenware utensils, 268, 378
Eating center, 238, 239
Eating customs, 386–388
Eating habits, changing, 130–132
Eating home-canned foods, 373, 374

Eating out while dieting, 135
Ecology, 287
Economics, effect on food customs, 22, 23
Ectomorph, 124
Edema, 154
Egg yolk, discolored, 358, 359
Eggs
as ingredients, 361–364
buying guidelines, 218–220
cracked, 233
cooking, 358–368
in baking, 314
storing, 233
Elderly
food needs, 149
food programs for, 69, 150
safety hints, 285
Electric range, 260
Electricity, 246–249
Emotional appeal, by food quacks, 36
Emotions and food, 26
Emotions, effect on digestion, 55
Employment agencies, 487, 488
Empty calories, 63
Emulsifiers, 30, 364
Enamel utensils, 268
Enchiladas, 434
Endomorph, 124
Energy
food sources, 63
how body produces, 54, 55
protein as source, 83
Energy conservation, 228, 256, 262, 287, 288
Enrichment, 66
Entertaining, 277–279, 388–390
Environment, 287
Environmental Protection Agency. *See EPA*
Enzymes
cause of food spoilage, 223
in digestion process, 47
in home canning, 370
in home freezing, 369
in human body, 44, 82
in saliva, 45
role of vitamins, 59, 60
EPA, 32
Equipment for pickling foods, 375
Equivalents, customary (Appendix J), 553
Equivalents, metric, 498
Esophagus, 45
Essential amino acids, 83
Essential fatty acids, 81
Ethnic customs
American Indian, 437–439
Creole, 443–445
international, 388, 389, 417–435
origin of, 16–24
Pennsylvania Dutch, 441, 442
Soul, 445–448
Ethnic groups, definition, 16
Ethiopia, food customs, 428, 429
Etiquette. *See Table behavior*
Evaporated milk, 190
Excess nutrients, effect of, 64
Exchanges (diabetic diet), 153
Exercise, 41, 42, 133
Extension cords, 247, 248
Extension service, home economics career in, 479

F

Fabricated foods, 66, 67
Fads, food, 34–37
Fall festivals, 421
Falls, 282
Family food customs, 24, 386–389
Family style service, 381, 383
Famines, 157
FAO, 169
Farmer's cheese, 191
Farmer's markets, 176
Fat as food
buying guidelines, 220
calories in, 62
description, 59, 80–82
digestion process, 48
food sources, 82
for pastry, 320, 321
functions, 59, 80
in baking, 314
in frozen desserts, 308
satiety value, 46
smoking point, 297
storing, 234
Fat in body, 51, 54, 80
Fat-soluble vitamins, 86
Fatty acids, 48, 50, 80, 81
FDA, 30, 33, 34
Feces, 48
Federal Food, Drug, and Cosmetic Act, 30
Federal Insurance Contribution Act. *See FICA*
Federal Meat Inspection Act, 206
Felafel, 427
Fermentation in home-canned food, 374
Ferrous sulfide, 359
Fertilized eggs, 35
Fertilizer, organic, 35
Festivals, 22
Feta, 427
Fetus development, 147
FHA/HERO, 477
Fiber, 48, 49, 79
FICA, 491
Filé gumbo, 445
Filé powder, 444
Fillings, pie, 323
Filo, 313, 331, 427
Finding a job, 485–489
Fine china, 378
Finnan haddie, 418
Fire bowl, 455
Fire extinguisher, 280
First aid, 285
Fish
buying guidelines, 215, 216
cleaning freshly caught, 465
cooking, 356–358
storing, 232, 233
Fish and chips, 417
Fish protein concentrate, 167, 169
Flammable plastics, 281
Flan, dessert
gourmet, 406
in Spain, 420
Flareup, 458
Flash freezing, 185
Flatware, 379, 380

Flavor as a sense, 25
Flavor of food, 112
Flavorings
  as additives, 30
  in baking, 314
Floor coverings, 245
Flour
  as thickening agent, 330
  buying guidelines, 202, 203
  how to measure, 301
  in baking, 313
  kinds, 202, 203
  storing, 233
Fluffy omelet, 361
Fluorine, 97
Folacin. *See Folic acid*
Folding egg whites, 362, 364
Folic acid, 91
Food and Agriculture Organization. *See FAO*
Food and Drug Administration. *See FDA*
Food-borne illnesses, 273–275
Food budget, 175
Food chain, 31
Food cravings during pregnancy, 148
Food customs
  in Africa, 427–429
  in Carribbean Islands, 434, 435
  in China, 431, 433
  in developing countries, 161
  in Ethiopia, 428, 429
  in France, 418, 419
  in Germany, 421
  in Great Britain, 417, 418
  in Greece, 427
  in Hawaii, 451
  in India, 430
  in Italy, 421–424
  in Japan, 433
  in Mexico, 433, 434
  in Middle East, 425–427
  in Midwest U.S., 442, 443
  in Near East, 425–427
  in Northeast U.S., 439–442
  in Northwest U.S., 449–451
  in Orient, 430–433
  in Pacific Coast, 449–451
  in Russia, 424, 425
  in Scandinavia, 420, 421
  in South U.S., 443–448
  in Southwest U.S., 448
  in Spain, 419, 420
  of American Indians, 437–439
  of immigrants, 439
  of Pennsylvania Dutch, 441, 442
  origin of, 16–24
Food distribution
  developing countries, 165
  United States, 185
Food fads, 34–37
Food for Peace Program, 158
Food gifts, 413-415
Food guides, 100, 101
Food habits, 127–129
Food label (Appendix F), 503
Food needs
  adults, 149
  athletes, 143, 144
  convalescing, 152
  elderly, 149
  ill people, 152
  infants, 96, 149
  nursing women, 148, 149
  pregnant women, 147, 148
  young children, 149
  world, 162
Food packaging, 186
Food poisoning. *See Food-borne disease*
Food preferences, 26
Food preparation jobs, 473
Food preparation skills, 110, 298–303
Food preparation terms (Appendix I), 551
Food preparation tools, 269, 270
Food prices, 174
Food production
  United States, 158
  ways to increase, 165–169
  world, 157–159, 162
Food programs for elderly, 150
Food quacks, 34, 36, 37
Food, serving, 381–386
Food sources
  B vitamins, 103
  biotin, 91
  calcium, 93, 101, 102
  carbohydrates, 79, 103
  chlorine, 95
  fats, 82
  fiber, 102
  folic acid, 91
  Important Food Sources of Nutrients (Appendix H), 541
  iodine, 96
  iron, 96, 102, 103
  magnesium, 94
  niacin, 90
  pantothenic acid, 91
  phosphorus, 93, 101, 102
  potassium, 95
  proteins, 83, 101, 103
  riboflavin, 90, 101
  sodium, 95
  thiamin, 89
  vitamin A, 86, 87, 101, 102
  vitamin B complex, 102
  vitamin B_6, 90, 91
  vitamin B_{12}, 91
  vitamin C, 92, 102
  vitamin D, 87, 101
  vitamin E, 88
  vitamin K, 89
  zinc, 97
Food spoilage, 223, 224
Food stamps, 69
Food storage, reasons for, 223
  Also see Storing
Food surpluses, 158, 169
Food trends, 27
Food waste, 161, 165, 290, 291, 383, 384
Food waste disposer, 263, 264
Fork, barbecue, 456
Formal style, 384
Formula diets, 138
Formulated foods, 66, 67
Fortified foods, 66, 189, 190
France, food customs, 418, 419
Free-standing range, 258
Freeze-dried foods, 186

Freezer
buying guidelines, 256
failure, 257, 258
storage, 226–228
Freezing
cheese, 230
containers for, 368
fruits and vegetables, 368, 369
general instructions, 226–228
main-dish meals, 110
sandwiches, 120
French dressing, 343
Fresh cheese, 191
Fresh Spinach Salad, 344
Freshly caught fish, cleaning, 465
Frijoles, 434
Frosting, 318, 319
Frostless refrigerator-freezer, 255
Frozen custard, 194
Frozen desserts
buying guidelines, 194, 195
preparing, 388
storing, 230
Frozen dough, 205
Frozen fish, 365
Frozen food
buying guidelines, 199
commercial, 185
cooking, 288
thawing, 288
Frozen fruit
buying guidelines, 199
using, 335
Frozen meat, cooking, 354
Frozen vegetables
buying guidelines, 199
cooking, 342
Fructose, 78
Fruit, 333–336
Fruit, canned, 198
Fruit, dried, 199, 200
Fruit, fresh
buying guidelines, 195–197
canning, 369–374
cooking, 334, 335
freezing, 367, 368
preparing, 333, 334
storing, 230
Fruit pickles, 375
Fruit salads, 343
Fry
fish, 357
general instructions, 297, 298
meat, 353
poultry, 355, 356
Frypans, 267
Fuel conservation, 228, 287, 288
Fuel, effect on food production, 162, 165
Full warranty, 252
Functions of nutrients
biotin, 91
calcium, 93
carbohydrates, 59, 77
fats (food), 59, 80
fats (body), 51, 54, 80
folic acid, 91
iron, 96
magnesium, 94
niacin, 90
pantothenic acid, 91
phosphorus, 93
proteins, 82, 83
riboflavin, 90
thiamin, 89
vitamin A, 86
vitamin B_6, 90
vitamin B_{12}, 91
vitamin C, 92
vitamin D, 87
vitamin E, 88
zinc, 97
Fuse, 247
Fuse box, 247
Future Homemakers of America, 477

G

Garbanzo, 200
Garnishes, 357, 358, 411–413
Gas range, 259, 260
Gastric juices, 45
Geese, 217, 218
Gelatin salads, 343
"Generally Recognized as Safe". *See GRAS list*
Germ (cereal), 89
Germany, food customs, 421
Getting a job, 489–493
Ghee, 19, 430
Gifts, food, 413–415
Glass ceramic
dishes, 378
range top, 258
utensils, 268
Glass utensils, 268
Glassware, 378, 379
Glaze on china, 377
Glucose, 48, 50, 78
Gluten, 202, 313
Glycerol, 48, 50, 51
Goat's milk, 190
Goiter, 96, 97
Government food assistance programs, 69, 70
Government, home economics careers in, 478, 479
Grain (cereal), 89
Grain consumption, 160, 161, 163
Grades
butter, 220
cheese, 194
eggs, 219
fish, 215, 216
fresh fruit, 196
fresh vegetables, 198
meat, 206
milk, 189
poultry, 217
shellfish, 215, 216
Graham flour, 202
Grains, cereal, 201
Gram, 498
Granular flour, 202
GRAS List, 30, 31
Greasing pans, 315
Great Britain, food customs, 417, 418
Greece, food customs, 427
"Green" revolution, 158
Green vegetables, how to cook, 340
Grid brush, 456
Grill, general instructions, 297

Grill, outdoor, 455
Grits, 205, 403
Ground beef, 207
Grounding appliances, 248, 249, 280
Guidelines for keeping a job, 493–497
Gumbo, 444

H

Ham, 209, 214
Hamburger, 208
Hard-cooked eggs, 358, 359
Hard water, 263
Haute cuisine, 418
Hawaii, food customs, 451
Healing body, 53
Health Certificate, 491
"Health" foods, 27, 35, 36
Health, signs of, 40
Heart, 50
Heartburn, 55
Height-weight tables, 124, 125
Help wanted ads, 485, 486
Hemoglobin, 49, 82, 96
Herbs, 406–411
Hibachi, 455, 456
High-acid foods, 371
High-altitude cooking, 294
High-calorie foods, characteristics of, 132, 133
High-fat diet, 138
High-protein diet, 138
High-quality proteins, 83
Hinduism, 19
Holiday customs in
  China, 433
  Ethiopia, 428, 429
  Germany, 421
  Great Britain, 418
  Greece, 427
  Mexico, 434
  Russia, 424
  Scandinavia, 420, 421
Holiday entertaining, 388, 389
Home-canned foods, using, 373, 374
Home economics careers in
  business, 480
  communications, 480
  consumer affairs, 479, 480
  education, 477
  extension service, 479
  government, 478, 479
  nutrition, 478
Hominy, 205
Homogenized, 189
Honey, 221
Hopis, 438
Hopping John, 448
Hormones, 53
Hospitality, 20, 22
Hot pack method, 371
Hot spot, 315
Houseplants, 249
Human milk, 148
Hunger, 13
Hush puppies, 446, 448
Hydrogenation, 81
Hygiene, personal, 275
Hyperacidity, 55

I

Ice cream
  buying guidelines, 194
  origin of, 421, 422
  storing, 230
Ice milk, 194
Ice ring, 390
Iced coffee, 395
Iced tea, 395
Immigrants, food customs, 439
Impulse buying, 179
Inadequate wiring, 248
Incaparina, 158
Incomplete proteins, 83
India, food customs, 430
Indigestion, 47, 55, 56
Individual plate service, 384
Industrial chemical wastes, 32
Infant formulas, 149
Infants' food needs, 96, 149
Inflation
  effect on food aid, 169
  effect on food production, 162, 163
Ingredients, for pickled foods, 375
Injera, 429
Insect problems, 224
Insecticide, use in home, 224
Insomnia, 43
Installment plan, 253
Instant coffee, 395
Instant energy foods, 54
International food aid, 169
Interview, job, 492, 493
Introductions, 389
Inventory, freezer, 227, 228
Invisible fats, 80
Invitations, party, 389
Iodine, 96, 97
Iodized salt, 97
Iron, 49, 96
Ironstone, 378
Iroquois, 438, 439
Islam, 19
Island kitchen, 240, 241
Italy, food customs, 421–424

J

Jams, 375
Jambalaya, 445
Japan, food customs, 433
Jars, for canning, 370
Jelly, 375
Job
  definition, 470
  finding, 485–489
  guidelines for keeping, 493–497
  obtaining, 489–493
Johnny cake, 440
Judaism, 19

K

Kaffeeklatsch, 442
Kasha, 424
Keeping a job, 493–497
Ketones, 80
Ketosis, 80, 86, 153

Kidney beans, 200
Kilo, 498
Kilojoules, 498
Kilowatt hours, 247
Kimchi, 451
Kippers, 418
Kitchen decorating, 249
Kitchen equipment
  buying guidelines, 267–270
  effect on meal planning, 112
Kitchen planning, 237–242
Kitchen problems, 242–245
Kitchen remodeling, 245–249
Kneading, 328
Knives, 270, 283
Kosher, 19
Koster site, 437
Krebs cycle, 54, 55
Kulich, 425
Kwakiutl, 438
Kwashiorkor, 85

L

L-shaped kitchen, 240
Labeling
  food label (Appendix F), 503
  fortified, enriched food, 103
  frozen food, 227
  nutrition, 70, 71, (Appendix E), 502
  packaged dinners, 365
  required information, 177
  textured vegetable protein, 209
  uniform meat labels, 208
  vitamin A, 87
Lactose, 78
Lacto-vegetarians, 146
Lamb, 209
Laminated plastic, 245
Land, effect on food customs, 17
Land, waste of, 163, 164
Lard, 220
Large intestine, 48, 49
Laundry center, 239
Leavening
  egg whites, 361–363
  in baking, 314
Lecithin, 35
Leftovers, 291
Leftover vegetables, 342
Legumes, 200, 201
Lentils, 201
Less tender cuts, cooking, 350
Lids, for canning, 370, 371
Life cycle, effect on food needs, 66, 101, 147–152
Life style, effect on
  diet, 144–146
  health, 55–57
  meal patterns, 99–101
  weight, 127–129
Lighting, 245, 246
Lima beans, 201
Limited warranty, 252
Linoleum, 245
Liquids
  how to measure, 301
  in baking, 314
  satiety value, 46
Liter, 498
"Little ice age," 162
Liver, human, 50
Living alone, 144–146
Lobsters, 217
Long grain rice, 204
Losing weight, 129–136
Low-acid foods, 371
Low-calorie foods, characteristics of, 132
Low-carbohydrate diet, 138
Low-cholesterol diets, 154, 155
Low-fat milk, 190
Low-quality proteins, 83
Low-sodium diets, 154
Luau, 451
Lucia Day, 421
Lunch
  packing, 119, 120
  planning, 117–119
Lussekake, 421
Lutfisk, 421

M

Macaroni. *See Pasta*
Magnesium, 94, 95
Magnetron tube, 260
Make-overs, 114
Make-your-own meal
  planning, 121
  storing, 226
Malnutrition, 67
Maltose, 79
Management jobs, 474
Manhattan clam chowder, 441
Manners. *See Table behavior*
Manual defrost, 255
Marbling, 206
Margarine
  buying guidelines, 220
  storing, 234
Marmalade, 375
Marzipan, 421
Masa, 433
Mature fruit, 196
Maturing agents, 30
Mayonnaise, 343
Meal patterns, 99–101, 150
Meals on Wheels, 69
Measuring cups, 269
Measuring dry ingredients, 301
Measuring liquids, 301
Measuring spoons, 269
Meat
  buying guidelines, 205–215
  cooking, 349–356
  distribution system, 185
  how to cut, 181, 182
  identification, 207, 208
  storing, 232
Meat consumption, 160, 161, 163
Meat Group, 102, 103
Meat tenderizer, 350
Medical problems, effect on food choices, 152–155
Meringue, 364
Mesomorph, 124
Meter, electric, 247
Meter (metric), 498
Metric equivalents, 498
Metric system (Appendix A), 498
Mexican wheat, 158
Mexico, cooking in, 433, 434
Microorganisms
  as cause of food spoilage, 223
  in home canning, 370

Microwave oven, 260, 261
Middle East, food customs, 425–427
Midwest U.S., food customs, 442, 443
Milk Group
  buying guidelines, 189–195
  cooking, 307–311
  description, 101
  storing, 229, 230
Milkfat, 189
Milk-fed veal, 209
Milk, human, 148
Milli-, 498
Minerals
  description, 60
  digestion process, 48, 50
  functions, 60
  nutrients, 92–97
Minestrone, 424
"Miracle" diets, 136–138
Miracle rice, 158
Mixer method, yeast bread, 327, 328
Mixing bowls, 269
Mixing center, 238
Moderation in diet, 64
Moist heat cooking, general instructions, 295, 296
Molasses, 221
Mold
  cause of food spoilage, 223, 224
  in home-canned food, 374
  on cheese, 230
Molded cookies, 319
Molé poblano, 434
Money-saving hints, 179, 181, 182
Mongolian hot pot, 431
Monosaccharides. *See Simple sugars*
Moslems, 19
Moussaka, 427
Mousse, 308
Mouth, 44, 45
Muffin method, 324
Musakka'a, 427
Muscles, 39
Muslims, 19

N

Napkin rings, 381
Napkins, 380, 381
Narragansetts, 438, 439
National Institute for the Food Service Industry, 476
National Marine Fisheries Service, 215
National Restaurant Association, 476
National School Lunch Program, 70, 118
National Standards Institute, 253
Natural cheese, 191–194
"Natural" foods, 35, 36
Natural resources, shortages, 287
Navy beans, 201
Neapolitan ice cream, 422
Near East, food customs, 425–427
Neopolitan Casserole, 402
Nervous system, 53, 54
Neufchatel cheese, 191
Neutral wire, 248, 249
New Emily Post's Etiquette, The, 388
New England clam chowder, 441
Niacin, 82, 83, 90
Noncrystalline candies, 415
Nonfat dry milk, 190
Nonfat milk solids, 189
Non-stick surface, 268
Northeast U.S., food customs, 439–442
Northwest U.S., food customs, 449–451
Nursing women, 148, 149
Nutrient loss
  cooking meat, 349, 350
  cooking vegetables, 338–341
  fresh produce, 196, 197, 198, 201, 204, 219
  hints for conserving, 290
  in storage, 223, 225, 229
Nutrient needs, changes in, 65–67
Nutrient supplements, "natural", 36
Nutrient teamwork, 65, 82, 87, 93, 94, 96
Nutrients
  as additives, 30
  body's need for, 64
  color of food, 197
  conservation, 290
  description, 13, 59
  digestion process, 47, 48
  functions, 60
  important food sources of, chart (Appendix H), 541
  in food, chart (Appendix G), 504
  restoration of, 66
  summary chart, 72–75
  transporting to cells, 51
Nutrients in Food, chart (Appendix G), 504
Nutrition
  careers in, 478
  definition, 59
Nutrition education programs, 167
Nutrition label, chart (Appendix E), 502
Nutrition labeling 70, 71, 108, 109, 502
Nutrition, poor, effects of, 67
Nutrition research, 66, 67
Nutrition surveys, 67–69

O

Obese, definition, 127
Obstetrician, 147
Odor, in home-canned food, 374
Oil seeds, 167
Oils
  buying guidelines, 220
  smoking point, 297
  storing, 234
Okra, 443, 444
Omelets, 359, 361
On-the-job behavior, 493–497
One-food diets, 138
One-wall kitchen, 239, 240
Onions, storing, 231
OPEC. *See Organization of Petroleum Exporting Countries*
Open dating, 179
Opening home-canned foods, 373, 374

Organic fertilizer, 35
Organic foods, 35, 36
Organization of Petroleum Exporting Countries, 162
Orient, The, food customs, 430-433
Osmosis, 95
Osteoporosis, 93, 94
"Other Foods" group, 104
Outdoor cooking, 457-465
Outdoor foods, 277
Outdoor grills, types, 455, 456
Oven-fried fish, 357
Oven meals, 288
Oven temperatures, 314, 315
Overcooking
  meat, 352
  vegetables, 338-339
Overuse
  carbohydrates, 79
  fats, 82
  fat soluble vitamins, 86
  general discussion, 64
  niacin, 90
  proteins, 85, 86
  sodium, 95, 96
  vitamin A, 87
  vitamin C, 92
  vitamin D, 88
  vitamin E, 88
  water soluble vitamins, 86
Overweight, 127
Ovo-lacto-vegetarians, 146
Oxidizing, 61
Oysters, 217

P

Pacific Coast, food customs, 449-451
Packaged dinners, 365
Packaged produce, 195
Packaging
  bacon, 214
  food, 186
Paella, 419
Paint, 245
Panbroil
  general instructions, 297
  meat, 353
Paneling, 245
Panfry, general instructions, 297
Pan placement in oven, 315, 316
Pans
  buying guidelines, 267
  how to prepare for baking, 315
  placement in oven, 315
  selecting right size, 315
Papagos, 438
Paraprofessionals, 477
Part-time jobs, 488
Paska, 424
Passover, 19
Paska, 424
  buying guidelines, 203
  in Italy, 422
  how to prepare, 329-331
Pasteurized, 189
Pastry
  baking, 320-323
  storing, 233, 234
Peas, dried, 201
Pediatrician, 149
Peeling hard-cooked eggs, 359
Peg board, 242
Pellagra, 90
Peninsula kitchen, 240, 241
Pennsylvania Dutch cooking, 441, 442
Pepsin (enzyme), 45, 46
Percolator coffee, 392
Performance seals, 253
Perfringens poisoning, 274
Peristaltic action, 56
Peristaltic waves, 44
Personal hygiene, 275
Perspiration, 54
Pesticides as contaminants, 32
Pesticides, use in home, 224
Pewter, 379, 380
Phosphorus, 93, 94
Pickled foods, 374
"Pick-your-own" produce, 176
Pie crust, 321-323
Pierogi (Polish dumplings), 23
Pilot light, 259, 260, 262
Pinch test, 124, 125
Pineapple boat, 335
Pinto beans, 201
Pirog, 424
Piroshki, 424
Pizza
  description, 406
  origin of, 422, 424
  recipe, 409
Placemats, 380
Planning center, 239
Planning meals ahead, 113, 114
Plantain, 434
Plaque, dental, 79
Plasma, 50
Plastic bag cooking, general instructions, 296
Plastic dishes, 378
Plastic, flammable, 458
Platelets, 50
Plattar (pancakes), 420
Poach
  fish, 357
  general instruction, 295
Poi, 451
Poisoning, 284
Poisonous plants, 249
Pollution, 32, 33
Polyunsaturated fats, 80-82
Pantothenic acid, 91
Poor nutrition, 67
Population explosion, 161, 162
Porcelain, 378
Pork, 209
Pork belly, 214
Portable dishwasher, 262
Portable electric appliances, 264, 265
Portion control, 114, 290, 291
Potassium, 95, 96
Potatoes, storing, 231
Potato flour, 202
Pot liquor, 101, 102, 340
Poultry
  buying guidelines, 217, 218
  cooking, 354-356
  storing, 233

Powdered sugar, 221
Powhatans, 439
Precooked rice, 204
Pregnancy, 147, 148
Prepackaged foods, 181
Preparing salads, 342–345
Pre-preparation, 299, 430
Preservatives, 30
Preserves, 375
Preserving food, cost of, 367
President's Council on Physical Fitness, 42
Presifted flour, 202
Pressed cookies, 319
Pressure cooking, 296, 340
Price per serving, 214, 215
Prices, food, 174
Problem kitchens, 242–245
Problems with appliances, 253, 254
Produce, 185, 195
Proteins
  body, 82
  calories in, 62
  description, 59
  digestion process, 48
  food sources, 83
  functions, 59, 82, 83
  in athletes' diets, 143
  loss in cooking, 350
  satiety value, 46
Protein salads, 343
Protein supplements, 158
Prothrombin, 88
Provincial cooking (France), 418, 419
Provitamin, 86
Ptyalin (enzyme), 45
Pueblos, 438
Punch bowl, 390
Pylorus, 47
Pyridoxine. *See Vitamin* B_6

Q

Quacks, food. *See Food quacks*
Quantity cooking, 278, 395
Quick breads, 323, 324
Quick-mix method (cakes), 316

R

Ragout, 418
Range center, 237, 238
Ranges, 258–262
Raw milk, 189
Raw pack method, 371
Raw sugar, 221
Raw vegetables, 337, 338
RDA, 64, 65
RDA, chart (Appendix B), 498
Recall procedures, food, 34
Receptions, 368, 385
Recipes
  Apple-Cheddar Fondue, 310
  Apple Pie, 444
  Caesar Salad, 405
  characteristics of, 293, 294
  Cheese Soufflé, 362
  Coney Islands, 390
  Creative Casseroles, 401
  Fresh Spinach Salad, 344
  Hush Puppies, 446
  Neopolitan Casserole, 402
  Pizza, 409
  Stuffed Cabbage Roles, 428
  Tortillas, 434
  Twinkle Cookies, 293
  White Bread, 327
Recommended Daily Dietary Allowances. *See RDA*
Recycling, 291, 292
Red blood cells, 49
Red flannel hash, 441
Red vegetables, how to cook, 340
References, job, 492
Refrigerated doughs, 205
Refrigerator cookies, 319
Refrigerator-freezer, 254–258
Refrigerator-freezer center, 237
Refrigerators, old, 284
Refrigerator storage, 225, 226
Regional foods today, 451, 453
"Regreening," 196
Regulated food additives, 31
Religious food customs, 19, 20
Relishes, 374, 375
Remodeling, kitchen, 245–249
Removing baked products from pans, 316
Rennin (enzyme), 45, 46
Repairing cells, 51–53
Research, 167–169
Resources for meal planning, 109–114
Responsibilities
  of guest, 390
  of party giver, 389, 390
Restoration of nutrients, 66
Resume, 491
Retinol. *See Vitamin A*
Riboflavin
  description, 90
  loss in storage, 229
Ribonucleic acid. *See RNA*
Rice, 204
Rice flour, 202
Rickets, 87, 88
Ripe fruit, 196
RNA, 52, 53
Roadside stands, 176
Roast
  general instructions, 296
  meat, 353
  poultry, 355
Roasting pans, 267
Rodents, 224
Rolled cookies, 319
RSVP, 389
Russia, cooking in, 424, 425
Rye flour, 202

S

Sabbath, 19
Safety
  building a campfire, 459–463
  cleaning up after campfire, 463–465
  cooking on outdoor grill, 457–459
  deep-fat frying, 298
  electricity, 246–249
  food waste disposer, 264
  freezer, 256
  home canned foods, 373, 374

Safety [cont'd.]
kitchen, 279–285
microwave oven, 262
plastics, 249
poisonous plants, 249
range, 261, 262
seals of, 253
Safflower oil, 36
Salad dressings, 343, 344
Salads, 342–345
Sales, 177
Salis, 438
Saliva, 45
Salmonella, 35
Salmonellosis, 274
Salt-free diet, 154
Samovar, 424
Sandwiches, how to make, 119, 120
Sanitation jobs, 473, 474
Sanitation, kitchen, 273–279
Satiety, 46
Saturated fats, 80–82
Sauerbraten, 421
Sausage, 214
Sauté, general instructions, 297
Saving money, 179, 181, 182
Scalded milk, 308
Scallops, 217
Scandinavia, food customs, 420, 421
Schnitzel, 421
School Breakfast Program, 70
School placement office, 485
Schwarzsauer, (German stew), 23
Scorched milk, 307
Scum, 307
Scurvy, 92
Seasonings in baking, 314
Seaweed, 169
Sectioning citrus fruit, 334
Security (basic human need), 13, 14
Sedentary lives, 42
Seesaw dieting, 130, 131
Selecting fruit, 196, 197
Self-cleaning range, 259
Self-esteem (basic human need), 14
Self-rising flour, 202
Selling techniques
food quacks, 36
supermarkets, 179
Sense of belonging (basic human need), 14
Sense of taste, 25
Serving food, 381–386
Seven Basic Food Groups, 105
Seven sweets and sours, 442
Seventh Day Adventists, 20, 146
Shchi, 424
Shelf life, 30
Shellfish
buying guidelines, 215–217
cooking, 356, 357
storing, 232, 233
Sherbet, 194
Shish kebabs, 425
Shoofly pie, 442
Shoplifting, 174
Shopping list, 179
Short grain rice, 204
Shortened cakes, 316
Shortening, 220
Shrimp, 217
Sickle cell anemia, 96
Signs of
good health, 40, 41
inadequate wiring, 248
poor nutrition, 67, 72–75, 115, 127
spoilage in home-canned foods, 373, 374
Silverplate, 379
Simmer
eggs, 358
general instructions, 295
meat, 353, 354
vegetables, 338–340
Simple sugars, 78
Singles, 144–146
Sink center, 238
Sioux, 438
Skewers, barbecue, 456
Skim milk, 190
Skylab, 169
Sleep, 42, 43
Small electric appliances. *See Portable electric appliances*
Small intestine, 47, 48
Smoked pork, 209
Smoking point, 297
Smorgasbord, 420
Snacks
part of meal pattern, 100
planning, 121
Social activities, effect on food customs, 20, 22
Social Security number, 489–491
Sodium, 95, 96, 154
Sofrito, 434
Soft peaks, 360, 361
"Son-of-a-gun stew," 449
Soufflé, 361
Soul food, 445–448
Soup
cooking, 364, 365
in France, 419
in Italy, 424
in Mexico, 434
Sources of career information, 476, 477, 480
Sour cream, 190
Sourdough bread, 451
South U.S., cooking in, 443–448
Southwest U.S., cooking in, 448, 449
Soybeans
buying guidelines, 201
Oriental cooking, 430, 431
protein supplements, 158
research, 167
soy milk, 17
textured vegetable protein, 83
Soy flour, 202, 328
Soy milk, 17
Space foods, 169
Spaghetti. *See Pasta*
Spain, cooking in, 419, 420
Special Food Service Program for Children, 70
Special Milk Program, 70
Speciality stores, 176
Spices, 406–411
Spoon bread, 443
Spores, 273, 371
Spumoni, 422
Spurting liquid, in home-canned food, 374

Stainless steel
flatware, 379
utensils, 268
Staphylococcal poisoning, 274
Staple food, 16, 159, 160
Starches, 79
Starvation, 13
Steam, as leavening, 314
Steam (cooking method)
fish, 357
general instructions, 296
Stemware, 378
Sterling silver, 379
Stew (cooking method), 295
Stiff peaks, 360, 362
Stir frying, 430
Stomach, 45
Stoneware, 378
Storage
kinds of, 224–228
kitchen, 242–243
Storage aids, 242–245
Stores, types, 175, 176
Storing
baked goods, 233, 234
beans, 231
bread, 233
cakes, 233
canned food, 229
cereal, 233
cheese, 230
cookies, 233
cream, 229
dried fruit, 231
dried vegetables, 231
dry milk, 229, 230
eggs, 233
fats, 234
fish, 232, 233
flour, 233
food at proper temperatures, 276, 277
fresh fruits, 225, 230
fresh vegetables, 225, 230, 231
frozen desserts, 230
frozen food, 227
herbs and spices, 410
home canned foods, 373
home-frozen fruits and vegetables, 369
ice cream, 230
large quantities of food, 278, 279
less perishable food, 224
meat, 232
milk, 229
oils, 234
perishable foods, 225
pies, 233, 234
poultry, 233
protein foods, 225
shellfish, 232, 233
sweeteners, 234
yogurt, 230
Strudel, 23
Stuffed Cabbage Rolls, 428
Subcutaneous fat, 80
Succotash, 440
Sucrose, 78
Sugar
buying guidelines, 220
carbohydrates, 78, 79
in baking, 314
measuring, 301
storing, 234
Sugar water, 149
Sukiyaki, 433
Supermarkets, 175
Superstitions and food, 17
Supplements, nutrient. *See Nutrient supplements*
Supply and demand, 174
Survival, need for, 13
Sweetened condensed milk, 190
Sweeteners
buying guidelines, 220, 221
storing, 234
Symbolism, food, 22
Symbols, metric, 498

T

Table behavior, 386–388
Tablecloths, 380
Table decorations, 381
Table linens, 380, 381
Table runners, 380
Table service, 382–384
Tableware, 377–381
Tacos, 433
Tamales, 434
Tapioca, 330
Tart shells, 407
Taste buds, 25
Taste, sense of, 25
Tea
buying guidelines, 395
in Great Britain, 418
in Russia, 424
Teamwork by nutrients, 65
Technological advances, effect on food, 23
Teeth, 45
Temperature of food, in meal planning, 113
Temperatures
bacteria, 276
Celsius, 498
cooking milk, 308
dry shelf storage, 224
egg mixtures, 361
food storage, 288
freezer, 226, 256
home canning, 371
meat, cooking, 352
meat, internal, 352
meringue topping, 323
microorganisms, 224
oven, 314, 315
pies, 323
preserving food, 367
refrigerator, 225
refrigerator-freezer, 254
serving cheese, 309
to prevent food-borne illnesses, 276
yeast dough, 327–329
Tempura, 433
Tender cuts, cooking, 350
Tenderizing meat, 350
Teriyaki, 451
Test for doneness
cakes, 316, 318
cookies, 320
fish, 357
meat, 352
poultry, 354

Test for ripeness, fruit, 196
Texture of foods, 112, 113
Textured vegetable protein, 83, 209
Thawing
  frozen food, 227
  frozen meat, 354
Themes, party, 389, 390
Thermometers, 270
Thiamin, 89, 90
Thickening agents, 330, 361
Thousand year eggs, 431
Thyroid gland, 63, 96, 138
Tile, 245
Timing food preparation, 303
Tlingit, 438
Tocopherols. *See Vitamin E*
Tolerance levels, trace elements, 32, 33
Tolerances, pesticide residues, 32
Tongs, 269
Tongs, barbecue, 456
Tongue, 45
Tooth decay 79, 97
Toothpicks, 388
Tortillas, 388, 433, 434
Tostaditos, 433
Tostados, 433
Toxins, 224, 273
Trace elements, 32, 33, 66, 93, 96, 97
Transfer RNA, 52, 53
Trash compactor, 264
Trends, food, 27
Trichinosis, 352
Truss, 355
Truth-in-Lending Act, 253
Tryptophan, 83, 90
Tumbler, 378
Turkey, 217, 218
Twinkle Cookies, 293

U

U-shape kitchen, 240
Ulcer, 55, 56
Unbleached flour, 202
Underweight, 139
Underwriters Laboratories, 253
Unit pricing, 178, 179
Uniform meat labeling, 208
Unitized, 195
Universal product code. *See UPC*
Unsaturated fats, 80–82
Unshortened cakes, 316
UPC, 178
Upright freezer, 256
U.S. Consumer Product Safety Commission, 285
USDA, 30, 480
U.S. Department of Agriculture. *See USDA*
U.S. Public Health Service, 189
U.S. RDA, 71, (Appendix C), 500
U.S. RDA, Percentages of (Appendix D), 501
U.S. Recommended Daily Allowances. *See U.S. RDA*
Use of
  dishwasher, 263
  electric appliances, 280–282
  food waste disposer, 263, 264
  portable electric appliances, 266
  range, 262
  refrigerator-freezer, 256, 288
  trash compactor, 264
Used appliances, 266, 267
USSR, 157
Utility bill, 247

V

Vacuum-type coffee, 392
Values, personal, 25, 26
Varenyky (Ukrainian dumplings), 23
Variety meats, 214, 351
Veal, 209
Vegetable-Fruit Group, 101, 102
Vegetable salads, 342, 343
Vegetables, canned, 199
Vegetables, dried, 200, 201
Vegetables, fresh
  buying guidelines, 197, 198
  canning, 369–374
  freezing, 367, 368
  preparing, 336–342
  storing, 230, 231
Vegetarians, 85, 146, 147
Vikings, 162
Villi, 47, 51
Vinyl floor covering, 245
Vinyl wall covering, 245
Visible fats, 80
Vitamin A (Retinol)
  deficiency, 87
  food sources, 86, 87
  functions, 86
  loss in cooking, 340
  loss in processing, 190
  overuse, 64, 87
Vitamin B complex, 89
Vitamin B_1. *See Thiamin*
Vitamin B_2. *See Riboflavin*
Vitamin B_6, 90, 91
Vitamin B_{12}, 91
Vitamin C
  deficiency, 72–75
  description, 91, 92
  loss in cooking, 334, 335
  overuse, 64
Vitamin D (calciferol)
  deficiency, 73
  description, 87, 88
  overuse, 64, 73
Vitamin E (tocopherols), 88
Vitamin K, 88, 89
Vitamins
  description, 59
  destroyed by alkalies, 340
  digestion process, 48, 50
  functions, 59, 60
  nutrients, 86–92
  overuse, 64
Volts, 247
Volunteer work, 488

W

Wall coverings, 245
Wallpaper, 245
Warranty, 251–253
Washing dishes, 303

Wasted food, 161, 165
Wasted land, 163, 164
Water, body's need for, 60, 61
Water conservation, 288, 290
Water ice, 194
Water-soluble vitamins, 86
Water-soluble nutrients
  loss in cooking, 334, 335, 338–340
  loss in storage, 231
Watts, 247
Wean, 149
Weather
  effect on food prices, 174
  effect on food production, 162
Weight, maintaining, 141
Weight problems, causes of, 126–129
Weight table, 125
Wheat germ, 204, 328
Whey products, 158
White cells, 50
White soup stock, 365
White vegetables, 340
Whole milk, 189
Whole wheat flour, 202
WIC program, 70
Wild rice, 204
Wok, 430
Work centers, 237–239
Work flow, 239
Work organization, 298–303
Work permit, 491
Work simplification, 299, 300
Work space, 242, 243
Work triangle, 239
World Food Conference, Ames, Iowa, 165
World Food Conference, Rome, 165
World Food Council, 165
World food production, 157–159, 162
World food reserve system, 167
Wrapping refrigerated food, 225, 226
WSB protein supplement, 158

Y

Yeast
  as cause of food spoilage, 223, 224
  as leavening, 314
Yeast bread, 324–329
Yellow vegetables, 340
Yield, 294
Yogurt
  buying guidelines, 190
  cooking with, 308
  in India, 430
  storing, 230
Young children, food needs of, 149

Z

Zinc, 97

DATE DUE SLIP

DUE EDUC FEB 08 '96

RETURN JAN 29 '96

F255

RECOMMENDED FOR USE
IN ALBERTA SCHOOLS

TX 663 K88 1977
KOWTALUK HELEN
FOOD FOR TODAY/

39365496 CURR

00002850724 2



A29741

